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78

EDWARDS' HEALTH BOOKS

CONTAINING

CONSTIPATION: PLAINLY TREATED. BRIGHT'S
DISEASE: HOW TO LIVE WITH IT. MALARIA:
WHAT IT MEANS. VACCINATION:
PRO AND CON.

BY

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CONSTITUTION:
PLAINLY TREATED.

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CONSTIPATION,

PLAINLY TREATED.

INTRODUCTORY.

“How are your bowels; are they regular?”
“Oh, yes, Doctor, they are pretty fair.” “Are they opened daily?” “Oh, no!” “How often are they moved?” “Well, sometimes every two or three days, and sometimes not for a week.” The foregoing conversation, which I venture to say has repeatedly taken place between every physician in active practice and many of his patients, is the author’s excuse for giving the following pages to the public.

It is astonishing, and I may say, incomprehensible, but nevertheless it is a dismal fact, that even among intelligent persons, little or no attention is paid to this all important matter of regular and free evacuations from the bowels. I recall to mind one striking case of an exceedingly



intelligent lady of sixty, who told me that she had never, throughout her long life, given a second thought to her bowels; when she had the inclination to have them moved, she generally, *but not always*, would seek the water closet; if the desire did not manifest itself, well, no matter, she did not care; and sometimes, she told me, a week or more would elapse without one single evacuation. This is not an isolated case. I venture to say, without fear of contradiction, that there are more persons in the world who are costive (generally through their own fault, or, at least, through want of information on the subject), by a large majority, than are regular. I have now under my care a woman who tells me that she frequently passes three weeks without a single evacuation. I set myself to work to induce regular daily passages, and, although well advanced in years, with her stomach and liver much disordered from this costive habit, the improvement in her appearance and in her general health has been marvelous. The Hon. Eli K. Price once told me of a gentle-

man, eighty years of age, who, possessed of an elegant constitution, seemed to bid fair to become a centenarian, but who, in course of conversation, said that his only trouble was that his bowels were not regular. Why do you not make them so, asked Mr. Price. "Why, how can I?" was the answer; "they will not act; how can I make them do what they will not do?" Eat bran bread, fruit, and so on, was the advice given. And in commenting on this case, Mr. Price said to me: "just think of it; there was a man who had lived in this world for over eighty years, and in all that time had failed to learn how to properly care for his bowels."

I have been led to regard regularity of evacuations from the bowels as one of the most important elements in the preservation of health and the promotion of longevity; and on the other hand, costiveness or constipation as one of the most active agents in the production of many of the diseases not dependent upon the presence of a special poison for their origin, and of producing

such a vitiated and disordered condition of the system, as to nurture and favor the development of diseases even which do require these special poisons. Therefore, I have become firmly convinced that if human nature thoroughly understood and appreciated the great necessity of regular evacuations, and would practice such simple rules as would secure them, much disease and discomfort would be avoided, and a better state of general health and longer life would result.

Therefore, it is my purpose in this book, to endeavor to demonstrate, in easily understood language, using the plainest and simplest words only, the great importance, I might even say the absolute necessity of this regularity, and to point out certain hygienic rules which will insure it, leaving the medicinal side of the question to the *intelligent* physician; I emphasize intelligent, because there is no *malady* (I use the word advisedly) so difficult to overcome and so trying to the patience both of the physician and his patient as an obstinate case of constipation; while at the same time,

the indiscriminate and *unintelligent* use of medicine, instead of relieving the constipation, only serves to confirm the costive habit and render the cure more tedious and difficult. Therefore, let me tell you now (and I will tell you again further on, and give you my reasons then) that you will enjoy better health if you never take a *single dose of medicine* to relieve constipation, without the advice of your physician. Ever since the days of the apostle St. Thomas (I think it was) and I dare say even before his time, human nature has been skeptical, more especially the intelligent side of it, and hence has generally refused to believe any statement implicitly for which it did not have a good and satisfactory reason. Therefore, I am going to give you the why and the wherefore of every fact which I enunciate, and will not ask you to take my word for anything, but to intelligently understand and thoroughly appreciate all the ins and outs of this question of constipation. In order that I may do this, I will divide this little book into three parts:—

Part First will tell you about the functions, the duties of the stomach and bowels.

Part Second will demonstrate the great necessity for daily full and free evacuations from the bowels.

While Part Third will give you such rules of life as will tend to produce them.

I trust these few pages may prove of benefit to some one. I am sure the melancholy, despondent and almost crazy dyspeptic will derive some benefit from their perusal, while the suffering victim of hemorrhoids or piles will find in them great relief from his agony. The bilious person will find a means of relieving the engorgement of his liver, if this organ be not absolutely diseased in its structure, while those tortured with splitting headaches will experience much relief by following the directions contained herein. With the hope that the poor sufferers from the various ills produced and maintained by this hydra-headed monster, constipation, may experience relief from the perusal of this little book, I sympathetically dedicate its pages to them.

PART FIRST.

THE FUNCTIONS OF THE STOMACH AND BOWELS.

Many of my readers have no doubt seen the little wagon belonging to an establishment for dyeing articles of clothing, etc., which used to go about our city a few years ago, bearing the curious inscription on its sides: "We live to *dye*, and we *dye* to live." Well, let me here suggest a similar curious motto: "We live to *eat*, and we *eat* to live." This is a self-evident proposition. You all know that it would be utterly impossible to live unless you eat. Just as it is necessary to supply an engine with coal in order that you may generate steam, so it is an essential of life that you should supply a sufficiency of wholesome food to your digestive organs, in order that they may generate the so-called *vital power*, which enables your various organs to perform their different functions, the sum total of whose actions consti-

tutes life. The organs mainly interested in the reception of food and its preparation and transformation into a condition which renders it capable of supplying nourishment to and repairing the waste of the various organs and tissues of the body are known to the physician under the comprehensive term of the *gastro-intestinal tract*. Commencing at the mouth, this tract or canal terminates at the anus. For the sake of familiar illustration, let me compare this canal to a rubber hose. Suppose you take an ordinary hose or rubber tube, about one and a half inches in diameter, and about thirty feet long. Imagine one end of this hose to be attached to the back part of your mouth, and you have the commencement of the passage way into the stomach. The food received into your mouth passes back into this tube, and, after descending it for about one foot, it reaches a point at which the tube has become very much distended, so as to form a bag, so to speak, about ten inches long and four or five inches wide, and capable of holding from one to

two quarts; this bag is your stomach. At the right end of this bag the tube narrows down again to near its original size in the throat, and for a length of twenty-five feet lies coiled up in your abdomen, constituting the small intestine or bowel; now, it again becomes slightly enlarged (not nearly so much as when it formed your stomach), and in this enlarged condition continues for a distance of about four or five feet, to terminate in your fundament at the anus. It is the function of your stomach to receive into it your food, and to commence to digest it. Some articles of food are completely digested in the stomach, and are absorbed directly from it into the blood and carried by this fluid to nourish the system. Other articles are only partly digested by the gastric fluid in the stomach, and after undergoing this partial disintegration and transformation, they are carried out of the stomach into the small intestines, that portion of the rubber tube where it has become narrowed, and meeting here with new juices, their complete digestion is

effected, and, transformed into a milky fluid, they are taken up by small vessels provided for the purpose, and carried to the blood, prepared to become part of that fluid and to repair the wear and tear of tissue. The stomach and bowels seem to have the peculiar property of selecting from the food taken in only that which is suitable and appropriate to nourish the body, and of rejecting the rest. Just as in coal you will often find certain impurities, not fit to generate heat, so in food there are certain elements not suitable to produce vital force, and these elements, refused by the digestive and absorbing organs, are carried on by the bowels, further and further along this tube, until they are finally expelled from the body in the act of defecation. Again, there are certain vessels distributed all over the body, whose duty it is to gather up the dead and useless particles of tissue, whose work has been performed, and whose continued presence in the system would be not only unnecessary, but absolutely injurious. You probably know that every act of life, even the

most unconscious, is performed at the expense of some particles of the tissue of your body. Each act causes the destruction of those particles which have been engaged in the performance of that act, just as the generation of heat in a stove causes the destruction of the coal which has been instrumental in its production. I use the word *destruction* here in its *liberal* sense for the sake of illustration. You all know, of course, that matter is indestructible, and that what seems to be destruction is in reality only a change of condition. So that these particles of your body are not in reality destroyed, but are so altered in their composition by the different vital acts to whose performance they have given their power, that they are no longer fit to constitute a part of your body, and by one of those beautiful laws of nature, they must be removed, to furnish in turn nourishment to the various articles of vegetable life, during which process their composition is again so changed that they are once more rendered fit to nourish the human body. So that, wonderful as

it may seem, some of the particles of your brain which will be used up in reading and understanding this little book, and which will be removed from your body in a disgusting state of decomposition, foul and unclean, and not fit to be touched, may, in the course of years, again find their way into your brain, through the agency of the food you eat, and may again be used up in reading a book, of which I may, perchance, happen to be the author. These particles being unfit to longer remain in the body, must be gotten rid of. The vessels of which I have spoken, distributed over the body, take them up and carry them to the various eliminatory organs, whose duty it is to remove them from the body, among which I may mention the lungs, kidneys, etc. Prominent among them stands the bowels; the narrow portion of the rubber tube. These vessels constantly acting, bring the dead and decayed matter to the bowels and empty it into them. They are the drain pipes, so to speak, coming from the different rooms in the different houses, and carrying the

waste into the common sewer, with which the bowels might be not inaptly compared. This matter is received and stored up in the bowels as waste matter is in your privy wells, until the proper time comes for discharging it from the body; and let me here anticipate myself by telling you that the proper time is once a day. The bowels not only play a vital part in the drama of life, but, if I may be allowed a literary liberty, they have also a mechanical function, so to speak. Your kidneys are constantly removing from the blood the elements whose combination forms urine. Now, if this urine trickled constantly from your body, it would be very annoying. Your clothing would be soiled, you would smell bad, and the surface of your body would be excoriated and made sore by the acid in your urine. So your all-wise Creator furnished you with a bladder, which is simply a reservoir, a receptacle, as it were, for the urine. Here it accumulates, drop by drop, until, the bladder being distended to a certain extent, an impression is made on the

nerves ramifying over its surface, and this impression conveyed to the brain, the desire to urinate is there originated ; and so, in obedience to this desire, your bladder is emptied, and thus so much dead and decayed matter is removed from your bodies. The same thing occurs with your bowels. The dead matter accumulates therein, as in the bladder, and finally, after reaching a certain amount, the desire to evacuate it arises, and so the refuse is removed. But let me tell you that, differing from the case of your bladder, if this desire to evacuate the bowels be neglected, the nerves will become so blunted, and the muscular wall of the intestine or rubber tube so torpid, that eventually, not only will the desire not arise of itself, that is to say, naturally, but it will be almost an impossibility for you to *force* an evacuation. You now understand enough of the functions of the gastro-intestinal tract or rubber tube to enable you to understand the remarks I will have to make on the necessity of daily evacuations from it, and how you can procure them.

PART SECOND.

NECESSITY FOR DAILY EVACUATIONS.

Every good housekeeper knows and appreciates the necessity of semi-annual house cleanings. If she does not scrub the floors before laying the carpets in the fall, and wash the paint, she does not consider that she has a pure and clean house. Every maid of all work has a certain day on which she must sweep the parlor, another for the dining room, and so on, and every day she must dust all the rooms. Windows must be washed and rooms aired. And all this work for what! In order that the house may be cleaned of its impurities.

All large cities vie with each other in perfecting their systems of drainage; and for what? In order that this very dead and decayed animal tissue of which I have been telling you may be removed and prevented from contaminating the air which we breathe, the water we drink, and the

food we eat. New cities are considered unhealthy, and why? Because, their drainage being imperfect, much of this refuse matter remains, to poison the inhabitants. An intelligent person going to live in the country will seek sloping ground ; and high locations are generally considered the healthiest ; why? Because, according to natural laws, drainage will be better, and the sloping ground will carry away from the vicinity of the houses that dead and decayed matter which your bodies are continually giving off. Now, does it not seem strange to you, when you stop to reflect on it, that intelligent men and women will go to all this trouble and expense to remove deleterious matter from their company, when it has once left their bodies, and yet so many of them will go on from day to day, unconcernedly performing their various duties of life, seemingly ignorant of the fact that an enormous quantity of foul, rotten and unclean matter is within their bodies, poisoning the very foundation of their lives, and sowing the seeds of disease and premature death? Does it not

seem incredible? Oh! it is a terrible thing, this ignorance of our own bodies. Was it not Pope who said, "*the noblest study of mankind is man.*" I do sincerely hope the day is not far distant when the study of physiology, in its elementary form, at least, will constitute, as it ought, one of the main points in the education of our boys and girls. Ignorance of the functions of our bodies constitutes a most prolific source of disease and misery. How can a person be expected to treat his various organs properly, if he is utterly ignorant of the way in which he should treat them.

This trouble of constipation is very frequently contracted by children when growing up. Their parents before them have not been taught to value the necessity of regular evacuations, hence they have not impressed it on their children, and so these boys and girls, when, in the midst of play and amusement, the desire to defecate comes upon them, resist it by all the means in their power, rather than have their recreation interfered with, and only yield obedience to it when its commands

become irresistible. Constantly and repeatedly refusing to listen to this voice of nature demanding a purification, a removal of poisonous matter, the bowels finally become exhausted, as I have told you, and a costive habit is established. Not being taught differently in childhood, they do not consider it injurious, when they grow to maturity, to allow their bowels to remain unopened for days at a time, and they, in turn, neglect this all-important matter in their children.

Dr. Lionel S. Beale, of England, says, in his valuable and practical work on "Slight Ailments," "You will find that people who suffer from habitual constipation, and those who have a regular but quantitatively deficient action, complain of certain unpleasant sensations. Although there is no organic disease, and if you examined every part of such person you would not find the least indication of the slightest structural change, the almost constant discomfort many of these people have to endure is really great; and not only so, but various more or less serious conditions

may result from habitual constipation. In this way that unpleasant condition known as hypochondriasis in the male and as a form of hysteria in the female, very often commences. There is even the possibility that a condition bordering upon insanity may be brought about by long continued improper action of the bowels."

Even your servant who attends to your furnace fire understands that he must clean out the ashes if he desires a good fire. If he allows the ashes to remain he may pile on the coal, but he will get no heat; the coal cannot burn, it cannot do its work, because the furnace is choked up with dead and useless coal, in the shape of ashes. The contents of the bowels are the human ashes. If you do not remove them, you may eat, but your food will not properly nourish you, for the evident reason that the vital functions necessary for the transformation of this food into nourishment suitable for the body are so interfered with by this mass of decaying animal matter within you that they cannot be properly performed. Any one who has

been constipated for some days, and then has an evacuation, cannot help but be struck by the terribly offensive odor of the passage, showing to what an extent decomposition has taken place. Do you know that the most prolific cause of typhoid fever is emanations, in the shape of foul gases, from privies and water-closets, these gases being generated by the decomposition of the matter you have passed from your bowels? Do you also know that typhoid fever is characterized by the presence of small ulcers or running sores in small glands, which are situated in your intestines or bowels? Now, does it seem out of place to imagine that the retention of a large mass of this same rotten matter in your bowels, and its undergoing decomposition there, and liberating these same poisonous gases, acting on these same little glands, might produce this same typhoid fever, or, at least, a condition very similar to it? Do you know what hemorrhoids or piles are? They are an enlargement, an engorgement with blood, of the small veins in the vicinity of the anus.

Now, can you not understand that the presence of a large amount of this poisonous matter in the lower part of the bowels—matter which ought not to be there, and which, consequently, is a foreign body—will so irritate the delicate lining of your bowels—a lining as delicate as that which coats the inside of your mouth and cheeks, with which it is both continuous and identical—as to cause an extra amount of blood to flow into its vessels, and this costive habit continuing, will eventually produce a chronic engorgement or congestion of these vessels, and you have all the sufferings and tortures of piles, as a result of this constipation? In women the womb occupies a position directly in front of the bowels, from which it is separated only by a thin membrane. Now, can you not easily perceive how this congestion of the bowels will also have a tendency to cause too much blood to flow into the womb, and to produce an engorgement of it, with all its attendant suffering? Again, the womb is movable; it is suspended in the cavity of the abdomen by ligaments or cords,

sufficiently stout and strong to keep it in its proper position when the organ is healthy ; but suppose this costive habit so irritates the womb as to cause a great, an excessive flow of blood into it ; of course it will be heavier than natural, the increase in weight being directly in proportion to the increased flow of blood. Being so much heavier than usual, the cords are unable to hold it in position, it drops down, from its own weight, and we have constipation, producing all the misfortunes of falling of the womb. Still more ; this constant irritation in the bowels keeps up a constant excess of blood in the lining membrane of the bowels, and you ultimately have a chronic inflammation of this tube set up, which, besides causing much pain and uneasiness in the abdomen, interferes with the proper digestion and absorption of your food, and hence all the phenomena of nutrition are impeded.

This mass of dead tissue remaining in the bowels undergoes decomposition, and being unable to escape in the natural way, some portion

of it is re-absorbed by the vessels ramifying over the surface of the bowels, and is carried into the blood, so that this fluid, when going its rounds to nourish the various tissues and organs, carries with it some of this poisonous material, and so poisoned blood gives poisoned nourishment to your various organs and parts.

A prominent physician of our city once compared the brain and stomach to the two balls or ends of a dumb-bell, while the nervous communication between them was likened to the shaft of a dumb-bell. This illustration he used to demonstrate the intimate connection which exists between the brain and the stomach, through the agency of the nervous system. The bowels, as you now understand, are simply a prolongation of the stomach ; they are most intimately connected with the brain by a large number of nerves. In children one of the commonest causes of convulsions is constipation, and the presence of worms in the bowels ; the worms acting as an irritant, a foreign body, precisely the same as a collection

of dead and decomposed matter does, will cause an irritation in the bowels, and this irritation, acting through the nerves by what is known to physicians as reflex action, will so irritate the brain as to give rise to many disordered phenomena on its part. Can you not, therefore, understand how easy it will be for constipation to produce those violent headaches to which costive people are so subject?

The liver is one of the largest and one of the most important organs in your body. How many hundred times have you heard your friends say, "I have a bilious attack?" These bilious attacks are caused by the incomplete removal from, and consequently a partial retention of the bile in, the blood, where it does not belong. When the liver removes this bile from the blood it stores it up in a small sac in that organ, from which it ultimately passes through a small duct or canal into the bowels, into which it empties at a short distance beyond the point where the narrowing of the bowel after its dilatation to form the stomach takes place.

The membrane which lines this duct is continuous and identical with that which lines the bowels. Now, can you not clearly understand how, when this undue retention of dead matter has caused an inflammation, an excess of blood in the lining of the bowels, this inflammation will extend up the bowels, through this duct or tube, and ultimately involve the liver itself? And let me tell you that neither the liver nor any other organ can properly do its duty if it is in a state of inflammation, if it has too much blood in it. This temporary engorgement, caused by a temporary constipation, if frequently repeated, will, by degrees, abnormally distend the vessels of the liver ; you will have a condition of chronic inflammation or engorgement, or too much blood produced, which, in turn, will cause degeneration and disease of the structure of the liver itself. So you have many cases of serious liver disease, induced by constipation. Of course, I need not tell you that the poisoned blood which I have said must result from constipation will carry some of this poison to all

the various parts of the body, and will produce injurious effects on them, thus interfering with the whole function of life. Let me close the list of ills produced by constipation, by telling you that death even may be caused by simple costiveness, when it has existed for a long time, and has become firmly established. To support this rather startling statement, let me quote the following remarkable case from Dr. Beale's work, already referred to. He says: "Constipation has caused death. I have myself seen such a case. I recollect an old lady who had been bed-ridden for years, and was, in fact, dying when she came under my observation, whose abdomen had increased to an enormous size. To my great astonishment, when I came to examine it, I found the swelling due to an enormous accumulation of hard fecal matter. There was no fluid, and very little gas; but the whole abdomen (or belly) seemed occupied by a huge mass of hardened fæces, I should think, amounting in weight to thirty or forty pounds. Unfortunately, I only saw the

patient a few hours before death, when she was reduced to the last state of exhaustion, and when it was impossible to interfere. In this case, faeces had probably been gradually accumulating in the intestines without attracting notice. The patient being bed-ridden, the circumstance seems to have escaped observation. Probably if a medical practitioner had been allowed to interfere some six months before, the patient might have been saved. Injections might have been given, and the contents of the bowel thus removed, before any harm to it had resulted.

I have now told you enough, I think, to make you fully realize the absolute necessity of free and daily evacuations from the bowels. You will now know, if you did not before, that the evil results of constipation are not confined to the bowels, but ramify throughout the whole organism. Indeed, they have no boundary. Their field of operation is only limited by the limits of the body itself.

Let us now see how you can procure these much desired daily evacuations without the use of drugs.

PART THIRD.

HOW TO PROCURE DAILY EVACUATIONS WITHOUT
THE USE OF DRUGS.

In the above title I emphasize the word *Drugs*, because I wish you to understand that the words *drugs* and *medicines* do not necessarily mean one and the same thing, though to the non-professional mind these terms convey the same idea, and the ordinary individual regards both *drugs* and *medicines* as articles which must come from the druggist's shelf. All *drugs* are *medicines*, but all *medicines* are not necessarily *drugs*. To point this difference, let me quote from the standard and exhaustive work on "Therapeutics and *Materia Medica*," by one of the greatest authorities now living, Professor Alfred Stillé, of Philadelphia. In the very first line of his introductory chapter, he says, "*Medicines* are substances used for the cure of diseases." Further on, he says, "*In some sense, even, all food is medicinal, for it*

counteracts hunger, the first symptom of a disease which tends directly to death." The word *drug* is less comprehensive in its meaning, and ought to be confined to those articles which the general public understand by the term *medicine*. Its use should be restricted to those articles whose *sole* use in the human system is to cure disease, while many articles comprised under the head of *medicines* (as Professor Stillé has told us) may be used not only to cure disease, but also simply as food. To illustrate this, in what I am sorry to say will probably be the most familiar manner to the majority of men, let me remind you that when you take a drink of brandy to relieve a stomach-ache, the brandy might here be considered a medicine, but you would hardly be willing to call it a drug, though, indeed, I must confess, it takes rank among the poisons. Again, many a severe case of dyspepsia will be cured by strict adherence to a milk diet. Milk is here a *medicine*, but no one will venture to call it a *drug*. I draw this distinction between medicines and drugs, because I

am now going to tell you that while much benefit will be derived by the person of costive habit from the use of certain *medicines*, about which I will inform you, nothing but injury and a further confirmation of the constipation can result from the indiscriminate use of *drugs*; a habit which I exceedingly regret to say is so common among our people, that the manufacturers of the various patent cure-all, anti-bilious and anti-costive pills have been enabled to build up enormous fortunes founded upon the gullibility (if I may be allowed the word) and ignorance of the laws of physiology of their victims. I use the word *victims* advisedly. I pity from the bottom of my heart the poor, well-meaning person, who, as a result of ignorance of the functions of his own body, will pay his money for and consume large quantities of these medicines, whose chief merits lie in the cunning minds of their manufacturers, and in the expensive and flaming advertisements of properties which they do not possess, and by which means many intelligent persons are duped into

buying them, and do not discover their mistake until very serious and sometimes irreparable injury has been done. Many of these medicines will open the bowels, it is true; I do not deny this; but you must not be satisfied with this superficial action; look deeper, and see what they do. They open the bowels because they contain certain *drugs* which possess the property of *stimulating* the muscular tissue in the bowels or rubber tube to increased action, and so they force the contents of this tube further and further along, until they finally reach the anus and are expelled.

Stimulation is an artificial process. In order that our functions may be properly carried on, and that we may have healthy life, there must be nothing artificial about us. All our actions, voluntary and involuntary, must conform to nature and be natural. You all know that *stimulation* is always followed by a corresponding depression. A certain quantity of alcohol taken into the system will stimulate every part of it; all your organs will act more rapidly, you will live

faster, as it were. When this stimulating action has passed away you suffer from depression, evidenced in numerous ways.

You are morose, melancholy and low-spirited, evidencing mental depression. You experience chilly sensations, showing depression of the function which generates heat. You have no appetite, showing depression of the general system. Your stomach cannot properly digest what you take into it, showing depression of the digestive function. And so on indefinitely, all your varied functions will clearly make known to you the inevitable depression that always follows stimulation. When the habitual drinker of alcohol has taken a glass or two too much at night, he knows full well the general depression which he experiences in the morning, and unfortunately he finds it necessary to consume more alcohol, in order to again stimulate his varied functions, so as to once more bring them up to that standard which, in the ordinary healthy, temperate person would constitute only natural action. Ultimately his system becomes so

accustomed to this stimulating action of alcohol that his organs cannot act properly without it, and so, in order to live with any degree of comfort, he is obliged to daily saturate his tissues with this poison ; or if he has sufficient manly resolution to discard this baneful habit, he must suffer terrible depression and many physical ills before his system can be brought to that healthy and natural condition by which it may be enabled to act simply as a result of the natural causes furnished to it by the Founder of Nature. So it is with this indiscriminate use of opening medicine. The bowels become ultimately so accustomed to the artificial stimulating action of powerful drugs, that they absolutely refuse to move without their aid ; they are dependent on them for sufficient power to expel their contents ; and as with alcohol, so with these drugs, long continued use breeds such tolerance of their effects that each successive dose must needs be larger than the preceding one, until, finally, enormous doses are required to procure a single evacuation from the bowels, which should

have occurred naturally and spontaneously if this pernicious habit had not been cultivated. I could tell you of one case where from twenty to thirty powerful pills are required to move the unnaturally torpid bowels. Do you not now think it wrong and very injurious to use these medicines, about which you know absolutely nothing, without first obtaining the advice of a competent physician, who has made the action of these medicines the study of his life? If any lawyer reads this book, let me ask him if he would not consider a man very foolish, and very much to be criticised for want of good judgment, if, throwing aside the services of the legal profession, he were to undertake the management of his own law business, without having had any previous training in that line? And so on, I might draw the comparison in every profession. But when we come to medicine, this question assumes much more importance; it then really becomes a *vital question*. When a man meets with financial misfortunes, his friends all say, to console him for his loss, "Oh,

well, you have good health." Those of a religious turn of mind daily pray for a preservation of health. Parents are anxiously solicitous about the health of their children. And yet, in spite of all this desire for health, these very persons will deliberately undertake to doctor themselves, and, as invariably happens when a man undertakes anything about which he knows nothing, they make many errors, and, instead of doing themselves good, only make matters worse; and this in the face of the fact that their Creator has placed at their service the science of medicine and its practitioners, in order that all curable ills may be intelligently treated. This is not a plea for physicians; far from it. Were I selfishly to consider the doctor, to the exclusion of the welfare of his patient, I would advise you all to freely use these proprietary medicines and wonderful specifics for everything; because by so doing you would ultimately bring about such a state of ill health that you would of necessity fall into the hands of the physician, and then your system

would be so deranged that it would cost you much more time and many more dollars to secure a restoration to health than if you had sought intelligent counsel and advice in the beginning of your trouble. The venerable lawyer of our city, the Hon. Eli K. Price, tells me one of the most important secrets of his great age (nearly eighty-four years) and splendid health, when he says, “I am as watchful as to my food as is the smelter of iron that his furnace shall not chill and choke; and regulate my food to prevent constipation or laxity, *rather than resort to medicine, which I avoid using until necessary*; and in illness, act in strict obedience to my chosen physician of regular graduation.” And he tells me that though he has been sick at times, from overwork, when he would be compelled to pay attention to hygienic laws, that “my recuperations have been to a higher point of health, even to the present year, when eighty-three years old.” Have I not, now, said enough to convince you that the unintelligent use of drugs can only be productive of ultimate harm?

It is like playing with fire ; if you trifle with it long enough, you will surely be burned. So let me beg you, if you desire good health—and show me the man or woman who *really* and *sincerely* does not, and I am prepared to attach my name to a certificate of insanity—never to take a single dose of opening medicine after you have read these pages, without the advice of your physician. Sometimes it is necessary to use them, but let your doctor be the judge. If the hygienic directions I will give you, when fairly and patiently tried, do not suffice to establish a regular habit of evacuations, make up your mind that the constipation from which you are suffering is in reality a disease, as much so as pleurisy or pneumonia, and go to your doctor at once and follow his directions implicitly.

I might here say that some persons seem to be so constituted that an evacuation only every second day constitutes in them the *natural* action of the bowels, and they do not seem to suffer the slightest inconvenience from it ; and again, some

persons in good health will have two and may be three passages daily. In these cases such persons may rest easy and satisfied ; they need not endeavor to procure daily evacuations. Still, however, these are only exceptional instances, every rule has exceptions ; and so I can, without fear, enunciate the fundamental principle, that "*without a daily free evacuation from the bowels perfect health is impossible.*

Just here I will tell you of a remarkable case. The first edition of this little work brought me many letters, and among them the following remarkable one, detailing a case so unique that I feel sure it will be of interest to you. This case illustrates in a most marked way the fact that no universal panaceas exist for any trouble. What will do for one man will be utterly useless with another. It contains also some very instructive information. Some of my costive readers may try, as my correspondent did, all the means I will recommend, and yet may fail to procure regular evacuations, as he failed. Such persons

may try the expedient to which he finally resorted, and succeed with it. Therefore, with his permission, I will give you his letter in full : " My dear Doctor, I thank you for the two books ; the one on Constipation I have just finished reading, and having inherited costiveness on the maternal side for over one hundred and fifty years, I can appreciate all your sensible suggestions on the subject ; yet from personal experience, I know them all to be ineffectual to cure, at *least in my case*. After trying everything, as food, of a laxative nature, including fine, large wheat, ground in an ordinary coffee mill, and then boiled down to a jelly, and eaten with molasses or cream, I finally abandoned all and fell back on the daily use of a *syringe*. For over twelve years past I have never even attempted an evacuation without its use. If I go from home for a day or a month I take one with me. My case is doubtless a peculiar one, as everything gets through the hose (or bowel), without pain or even inconvenience, but when in the rectum

(lower bowel), a drying process commences, as fierce, hungry and quick, as if the *faeces* had fallen into a kiln. A little water, say a pint, put into the rectum and held there a few minutes, will lubricate the dry, hard accumulations of a day, and, without straining, I am saved the horrors of prolapse, have a pleasant peristaltic movement, and go about my daily work, a cheerful and happy man. Friends whom I meet in the streets of Philadelphia often inquire what it is that gives such health and complexion at sixty-five. To the ladies we say, on our farm in Delaware County we have the spring that Ponce de Leon spent so much time in searching for, the rejuvenating water that gave renovated youth to all who drank or bathed in it. To my male friends I sing the wonders and blessings of the syringe." A few days after the receipt of this letter I met my correspondent, and he gave me more of the particulars of his interesting and remarkable case. All of his family, with but one single exception, are equally as costive as

he is, and all are prepared to glorify the syringe. For years he suffered tortures, really agony. Several days would elapse without an evacuation. He would be miserable, low spirited, gloomy and despondent. Appetite and sleep would be impaired. His food would not taste right. Finally, after several days, he would seek the closet and attempt to force an evacuation. The hard, dry, large and irritating masses of fecal matter would be slowly forced along the bowel, producing a stretching, a distending of this canal, and causing such pain, such suffering, such agony, that I can readily believe the description given to me by *many* female patients, that the terrible suffering experienced from an evacuation of this nature is similar to, in kind, and only a little less severe than the tearing, distending and heart-rending pains of childbirth. When finally the fecal matter would leave the bowel, this terrible straining would cause some of the bowel to protrude after it, and he would have prolapse. Then he tells me this suffering, this annoyance, this nervous

and uncomfortable condition, into which his terrible ordeal had thrown his whole system, would last nearly all day. In a few days this awful procedure would have to be repeated, and his life in the meantime be rendered miserable by unhappy anticipations of his inevitable suffering. I will ask any of my female readers who may happen to be mothers, whether they would have any peace, happiness or quietude, if they felt sure that, regularly *once a week*, they would be compelled to undergo the sufferings of labor. My unfortunate correspondent was for many years compelled every few days to undergo a process very nearly as painful. His physique was wonderful, otherwise such strain and wear and tear would have killed him. He informed me that his mother, who was afflicted with this costive habit, died when about fifty years of age, and he added, "I firmly believe that had she been acquainted with the use of the syringe and its merits, she would, in the natural course of events, have lived to be eighty." My friend was treated

by nearly all the prominent physicians of Philadelphia ; he tried every hygienic means to overcome his trouble, but derived only temporary benefit. His life was in reality a burden to him. He could see pleasure in nothing. Finally he became acquainted with the syringe. A magical change came over him. With its use, daily, free, copious and painless evacuations became the rule. His sleep and appetite became good. His disposition became joyous, he looked on the bright side of life. Should I point him out to you, and ask you to guess his age, I am sure you would say about fifty. He is sixty-five, and hale, hearty, vigorous, possessing an even and equable temperament, leading a regular and comfortable life ; he should, according to all natural laws, live for very many years.

Let us begin where this costive habit usually commences, that is to say, in childhood. Most babies suffer from constipation. If your baby's bowels are not moved daily, I will tell you a simple procedure which will generally secure a

passage. Take a piece of ordinary note paper, not too stiff, and roll it into an old-fashioned lamp lighter; insert the sharp end carefully, gently and gradually into the bowels, for a distance of about two inches; let it remain for a few minutes. The presence of this paper will slightly irritate the bowels, not enough to do harm, but just enough to bring on sufficient action of their muscular coat to expel the contents. Smear the point with Castile soap before introducing, so that it may more easily slip in. If this fails, procure a small, hard-rubber syringe, and daily inject into the bowel one or two syringefuls of *warm (not hot)* water; this will aid the contraction of the bowel, and will, at the same time, soften and dilute its contents, so that they may the more easily be carried out. If this warm water fails, use a little Castile soap in the water. If the bowels still remain unopened, substitute plain olive oil for the soap and water. If your baby is naturally costive, that is to say, if he does not have a regular daily evacuation, you should practice this injection daily, and I

would recommend bedtime, after baby is undressed and just before being put into bed, because a full and free evacuation from the bowels will insure to him a full night of sound and refreshing sleep. Attention to the bowels becomes of paramount importance after baby has commenced to cut his teeth. All mothers know that when teething babies are particularly liable to convulsions. This is due to the fact that the teeth, in forcing their way through the gums, irritate and inflame them, and this irritation of the gums is conveyed, by the reflex action about which I have told you, to the brain, and irritating this delicate organ, will cause convulsions. Now, if, in addition to the irritation from teething, baby's bowels are also irritated by the retention in them of a foul mass of decayed matter, the liability to convulsions is doubled. This irritation of the gums will produce a feverish state of the blood ; now, if the bowels are costive, this feverishness will be increased. If you are nursing your baby, it will be well for you to eat freely of such food as I shall

tell you, further on, has a tendency to open the bowels ; baby receiving this through the medium of your milk, will be made regular. Be careful, however, to avoid such articles as experience tells you will give baby colic. If these simple means fail, do not resort to castor oil or any other drug, but ask your doctor what to do.

In this connection a word for what are generally termed "*cross children.*" It is not natural for a child who is well to be cross. Of course, there are exceptions to this, as to every rule. But in the majority of cases, a child whose organs are all working properly, who has plenty to eat, and who is not in any way irritated, will be good ; it will not cry and worry. Therefore, if your child is fretful and peevish, and at the same time is in good health, examine as to whether the clothing is irritating or fits badly, or whether a pin may be sticking him. If you can find no cause, then you may suspect *worms*. The presence of these parasites in the bowels, I doubt not, has earned for many a little girl or boy the unjust

soubriquet of “*cross.*” When you suspect these worms to be present, having excluded all other causes for the crossness, you may purchase some *good worm syrup* from a RELIABLE druggist, and use it. I am not an advocate of “*home doctoring;*” I heartily condemn the practice; my books are not meant to supplant, but merely to aid the advice of the doctor; still, in this trifling and *excessively* common trouble of worms, I do not think you will do your child any harm by using some simple worm syrup, according to the printed directions of some *reliable*, mind you, I say reliable, apothecary.

When your baby becomes a little girl or boy, and is able to toddle about and eat table food, you can, *in addition* to the means I have already indicated, use certain articles of food. A very good practice is to give your children oatmeal mush for breakfast. This oatmeal, after all the nourishment is removed from it by digestion in the stomach and bowels, still leaves a large indigestible residue, which is somewhat irritating to

the lining membrane of the bowels ; not enough here, again, to do harin, but just enough to remove the torpidity which may exist and excite the tube to healthy action. Bran bread, unbolted flour, grits, cracked wheat, and the like, may also be used at breakfast for the same purpose. One of the most important elements in establishing and maintaining a habit of daily evacuations is *regularity*. When I am requested to prescribe for a case of constipation, my first instruction to the patient is to determine what time of the day is the most convenient for them to devote to this important function, and when they have settled on this hour, I insist upon their seeking the water closet *precisely at the same hour each day*. I tell them to remain there for a few minutes, and to strain *gently* ; if they strain very much they will be liable to do themselves a great deal of harm. If they fail at first, I tell them to go the next day at the same time, and so on, day after day, until, ultimately, this process of coaxing will have the desired effect on the lazy and torpid bowels, and

a regular daily habit will be established, and the desire will manifest itself each day at precisely the same hour. Then I caution them that, having once established, they must never neglect this desire. Every one has experienced the fact that if you resist a desire to have the bowels moved, after a little while this desire will disappear, and no effort of the will can bring it back; well, one day's neglect of this desire, in a person who has been for some time constipated, will, in many cases, derange the bowels for several days. So, as soon as your baby is large enough, put him regularly every day, at the same hour, on his chair, and giving him toys to amuse himself, let him remain there until his bowels have been moved. Do not fret and worry if your baby is costive; nearly all babies and young children are so. I once heard a prominent physician, the father of a large family, say that his different children came to him daily for an injection, with as much regularity as they would eat their dinners. He would give them the injection,

but at the same time would use the means I have given you to produce a regular habit, and ultimately, as his children grew older, the injections became unnecessary. Keep up this supervision until your children have grown to be young men and women, and they will not forget the training they have had, but will continue through life to understand and appreciate the necessity of regularity in this respect, and will, in turn, impress it upon their children, and so I warrant you not a small share of disease and bad health will be averted. You know how necessary it sometimes is to *coax* an obstinate child to do as you may desire, and every one is familiar with the coaxing requisite to move a balky horse. Well, this process which I have just described to you is one of coaxing: by offering the opportunity at regular and stated intervals, you coax, you beg, as it were, the obstinate and lazy bowels to healthy action, to do as you desire, and as in the cases of the obstinate child and the balky horse, your efforts will ultimately be crowned with success,

and the bowels, like the child and the horse, will eventually yield to your repeated pleadings, and a regular habit will be established. If you do not at first succeed in establishing this habit of regularity, do not fret and worry ; if you do, you will make yourself feverish, fretful and irritable, probably cause a headache and make matters worse. Take the refusal of your bowels to act coolly and philosophically ; wait until the next day and try again. I need hardly tell you that should the desire to evacuate arise before the next day comes, do not refuse obedience to its commands.

I have known many obstinate cases of constipation to be ultimately overcome by the following simple method ; Pare an apple and eat it before breakfast, chewing it thoroughly, until it becomes pulpy, before swallowing ; on top of this drink a glass of *cold* water, then eat your breakfast. In many cases a desire to have the bowels moved will be experienced immediately after breakfast, when this habit is persevered in. I have known some persons who never experienced the desire

immediately after breakfast, but who, after a short walk, would have a copious movement. These persons would always *walk* to their place of business and seek the water-closet immediately after reaching there. Muscular exercise is a most powerful agent in promoting regularity of bowel action. I have known persons who were subject to attacks of constipation and biliousness, foul mouth and disordered stomach, who would take a brisk five-mile walk in the pure, bracing and invigorating air, and upon returning home would have a copious discharge from the bowels, followed by immediate relief from all their distressing symptoms. You all know that a brisk walk in the country, where the air is pure and uncontaminated, has a tendency to quicken the circulation and to elevate the spirits and remove the general depression, physical and mental, to which the residents of our large and crowded cities are so liable; well, in this general elevation or natural stimulation of all our muscles and organs, the muscular coat of the bowels comes in for its share, and, stimulated

to a certain extent, its unnatural torpidity is removed, and it obtains sufficient strength and vigor to expel its contents. Also, this muscular exercise causes a change, a transformation of the muscular elements concerned in its performance into so much dead and decayed matter, seeking removal from the body, wherein it has performed its duty, and is no longer of any use; so that this additional bulk of matter, being superadded to that already stored up in the bowels, makes a stronger impression on them, the demand for removal becomes greater, and hence the torpid bowels are finally compelled, in spite of their laziness, to act. So I would recommend to the costive man a brisk, daily walk of five miles in the country, and to the woman half that distance. If you can secure pleasant and cheerful company in this walk, so much the better; if you cannot, employ your mind with pleasant thoughts, to the exclusion of business. Select a beautiful country, in which the aspect of nature is varied, so that the eye may not become tired and the mind exhausted

by monotony. Make this walk a *pleasure*, and not a *duty*. Do not tell me that you cannot find time for this daily walk; that you are too busy, and so on. Charles Dickens, who probably performed as much and as satisfactory work in his lifetime as any man who ever lived, was able to make time for an almost daily *ten-mile* walk, to which he invariably resorted when he felt out of sorts and in poor spirits. When oppressed, from too much work, and I dare say, sometimes from costiveness, he would write, in his off-hand way, to his intimate friend, "Come for a stroll in the country and a chop." Off they would start, and after a brisk five-mile walk in the country surrounding London, would indulge in a chop and a mug of ale or beer, and, after a short rest, back they would speed to town. These walks, enlivened and made pleasant by the companionship and conversation of his most intimate friend, during which, no doubt, they would exchange ideas upon and discuss the various themes suggested to them by the surrounding nature, would

always bring the great novelist back to the city full of health and good spirits, and amply prepared to make up by increased power of application (for the time consumed in recreation) to his favorite literary work, which has made his name famous for all time in every portion of the globe in which the English language is or may be spoken. Do not neglect this all important matter of exercise. I know you are prepared to doubt the influence of exercise of your legs in causing extra activity of your bowels, but nevertheless, in spite of your skepticism, this relation does exist ; and if you do not believe me, ask some doctor in whose opinion you have confidence. Some judgment must, however, be used in this matter of exercise, or you may do more harm than good. “One man’s meat is another man’s poison,” you know. You must ever bear in mind that there does not exist such a thing as a “universal panacea.” This very five-mile walk may cure constipation in one person and only serve to confirm the habit in another. Try it, however, and let

your own experience be your guide. As a rule, a person whose occupation is of a sedentary nature will be more benefited by a short walk, say of two or three miles, than he will by one of five. Why? Because evenness of life is most conducive to health. If a person be accustomed to a quiet, sedentary life, and suddenly breaks away from his work to indulge in a brisk five-mile walk, the change from his usual mode of life is too sudden and severe, and his system receives an unpleasant shock, which it will probably resent. While, on the other hand, one whose occupation is of an active character will receive, not a shock, but a gentle and pleasant stimulus from this same walk. Exercise, and especially that form of exercise derived from walking, will be particularly valuable to judges and lawyers. Their lives, from the nature of their occupations, must be sedentary, and worse than sedentary. Much as I respect an upright and honest judge, believing, as I do, that his profession is one of the very highest known to man, his responsibilities and his power for

doing good, if this power be properly and intelligently and faithfully made use of, enormous, yet I thoroughly and sincerely pity him. He is, in reality, himself a sacrifice to human justice, as much so as the criminal in the dock before him, upon whom he passes sentence of capital punishment. His sacrifice is a slow and prolonged one; hence it is not appreciated as it should be. The book-keeper and the clerk receive the pity and commiseration of sanitarians, because their work is so confining. How much more the poor judges are deserving of this pity I shall endeavor to show you. A book-keeper or a clerk is confined, it is true, nearly all day in his office, and does not find time for muscular exercise; but, as a rule, the number of people who inhabit this same office, in proportion to the space for air, is so small that he is assured a sufficiency of pure, wholesome atmospheric air, which supplies him with an abundance of the health and life-giving oxygen. Again, the business offices of mercantile men (in Philadelphia, at least, and I imagine in

most large cities) are, as a rule, at some distance from their homes, so that by *walking* to and from their offices they secure a considerable amount of exercise. Literary men lead very sedentary lives, but this is their own fault and not their misfortune. They can arrange their hours and places of work to suit themselves. They can, if they so desire, have plenty of exercise. They can live in the country, and in fair weather do their work out of doors, under the shelter of a tent, thus receiving plenty of air, and can intermit their work every now and then for a few minutes' muscular exercise. The large, successful, and wealthy merchant can arrange, if he so pleases, his hours of business so as to allow him plenty of time for exercise; he can have plenty of air in his office, and can every now and then refresh himself with a short trip. The physician, busy and hard worked though he may be, exposed constantly to contagion, yet, from the very nature of his occupation, he receives a sufficiency of exercise. If not very successful, he makes his professional

visits on foot, and thus gets exercise. If very busy, he is continually alighting from and getting into his carriage, ascending and descending stairs, all of which is exercise for his muscles. The mechanic and laboring man all exercise their muscles. But the poor judge; let us follow him. From ten in the morning until three in the afternoon, for ten, and in some cases, for twelve months in the year, he is compelled to *sit quietly* in a crowded court room. The room not only contains more persons, by a large majority, than even the most improved method of ventilation could furnish a sufficiency of oxygen to, were they pure and immaculate as angels, but in addition to this overcrowding, which would in itself alone poison the atmosphere, the majority of the occupants are from the very lowest and dirtiest classes of society. Their lungs and their bodies are constantly giving out foul odors of rotten tobacco and worse whisky, decayed tissue and filth of all kinds, to still further poison and deteriorate the air of this overcrowded room. And in this at-

mosphere of filth and poison the poor judge is obliged to *quietly and passively sit*, hour after hour, and day after day, no exercise for his muscles, all brain work. Is he not a sacrifice? Is he not to be pitied? Is it any wonder that his bowels become torpid and lazy, and he is costive? I will advise all judges who desire to have health, long life, and regular daily evacuations from the bowels, to make their residence in the pure and uncontaminated country, three or four miles out. When court adjourns they should hurry to their homes; riding or driving out will afford them good exercise. Let them fly, at the very earliest moment, from the pest house they have been inhabiting all day to the pure country, and rid their lungs and body of the accumulated filth. If they will not do this, let them make a daily practice of taking a good long walk in the suburbs of their city, where the air will be less contaminated than in the heart of the city. If you follow my advice you will have regular daily evacuations, and all the subsequent health, pleasure and comfort de-

pendent upon them. If you do not you will be costive, and you know now what that means. In connection with this recommendation of walking, let me urge upon you the free use of all kinds of muscular exercise, such as riding, driving, swimming, skating, and the like, using the same judgment in their employment as I have indicated in my remarks on walking. They will not only serve to improve your general health, but will exert a specific influence in aiding the torpid bowels.

I must here condemn one of the most usual forms of exercise indulged in by young men, but will make a qualified condemnation. If you will get into a boat and paddle leisurely two or three miles, resting every few minutes for a few seconds, you will derive positive benefit from this form of exercise. But how few young men row after this fashion. They join a club, and from the start their ambition is to form one of the racing crew; consequently, they practice, hour after hour and day after day, rowing violently, for many miles, and imagine they are developing their strength.

They do develop their voluntary muscles, that is, those under the control of their will, but this they do in many cases at the expense of their vital organs. This violent strain which they put on their hearts will, in many cases, so injure this important organ that serious disease will ensue, and though they may become magnificent specimens of physical development, they break down prematurely, and become old men in middle life, invalids while still young, with a diseased heart. This fact is familiarly illustrated in Wilkie Collins' novel, "*Man and Wife*" (I think it is), in the person of Geoffry Hamlyn, who is one of the typical English amateur athletes of the present day. His sole aim in life seems to be to develop his muscles. He succeeds admirably, and is a marvel of brute strength. He undertakes to engage in a running match, though warned by physicians that he may ruin himself by so doing. He enters the race and out-distances all competitors; when nearing the end he suddenly totters and falls unconscious on the track;

he is picked up a confirmed invalid, a broken-down man, with heart disease, and this once magnificent specimen of manhood, though still young and apparently robust, seems like an old man, and drags out a miserable existence of suffering, ultimately dying many years sooner than was necessary. He had overstrained his heart and it had succumbed. Again, even though you may not desire to train for a race, you will generally form one of a crew of four or six, who start out to row a given distance. Under the command of a coxswain you all pull together, and are anxious to make your boat speed through the water. Should you become exhausted, your pride urges you to keep up with your companions, and so neglecting the warning you receive, you continue to overstrain your heart, and, ultimately, disease will ensue.

I would decry running as an exercise; this form of exercise is no better than walking, and is far more dangerous. In a word, all violent exercise is injurious, and none should be

indulged in that will cause the heart to beat violently and very rapidly. Exercise should never be carried to a point of actual fatigue; stop a little short of this and you will benefit yourself; go beyond it and you do yourself an injury.

Before leaving this question of exercise, I will refer to a paper read at a recent meeting of the Philadelphia County Medical Society, by Dr. Benjamin Lee, on the "Treatment of Constipation by the *Swedish Movement Cure*." As all the motions in it described really mean muscular exercise, active or passive, I will transcribe it as I find it reported in the *Medical and Surgical Reporter*: "In order the more readily to convey a definite idea of the principles on which the *Swedish movement cure* is based, and the mode in which these principles are carried into practical execution, I have written upon the blackboard a prescription for that *bete noire* of the profession, constipation. I recommend this mode of prescribing, as the sword which, so far at least as a large amount of chronic disease is concerned,

will cut the Gordian knot of the problem with which we have been wrestling this evening, namely, the relations of the druggist to the physician; for I venture to say that no apothecary can be found who will undertake to compound a prescription like this. You will observe that each clause of the prescription contains two parts; the first is the attitude or position to be assumed by the patient in taking the movement; the second is the movement itself. I have distinguished them by drawing a line down the middle of the prescription.

PREScription OF MOVEMENTS FOR A CASE OF OB-STINATE CONSTIPATION.

1. Heave standing.	Chest expansion, deep inspiration.
2. Half lying.	Leg flexion and extension (p. r.).
3. High ride fall sitting.	Trunk twisting (p. r.).
4. Toward standing.	Thigh extension, forced (p. r.).
5. High ride turn sitting.	Circular twisting with pressure upon stomach and in the lumbar region.
6. Extension standing.	Colon stroking.
7. Forehead fix, high knee astride standing.	Spine extension, forced (p. r.).
8. Side stretch standing.	Liver vibration.
9. Lying.	Abdomen kneading, pressure with vibration over solar plexus.

“The attitudes being very various, their nomenclature is necessarily somewhat cumbersome, while its foreign parentage makes it awkward to

our ears. Suffice it to say, that each variation has reference to special groups of muscles, or certain organs.

“The first movement in this prescription is a respiratory one, taken in the erect position, with the chest thrown out, and accompanied by deep inspirations; its object being to invigorate the entire system by introducing a large amount of oxygen into the blood, and by means of this pure blood supply to bring both muscles and nerves into a highly vitalized state, in which they will respond most readily to the stimulus of the subsequent movements.

“The second is derivative, designed to relieve congestion of the abdominal organs, by drawing down the blood into the lower extremities. In this, the trunk is placed at rest in a semi-recumbent posture. The letters (p. r.) will be noticed immediately after this movement. They signify that *patient resists*, the movement being made by the operator. This is, therefore, a *duplicated movement*, and the entire will of the patient

being concentrated upon this effort, it is powerfully revulsive.

“ The third movement has two principal ends : the first, pressure upon the entire abdominal contents by the abdominal parietes (or walls of the belly), thus relieving congestion by forcing the blood out of the larger vessels ; and secondly, invigorating and developing the transverse and oblique abdominal muscles, which are rarely brought into play in ordinary exertions. The attitude is such as to fix the pelvis. The arms are then crossed over the top of the head, and the extended elbows are made use of as a lever, by means of which the trunk is twisted or rotated upon its axis, the patient resisting the operator’s effort.

“ The fourth places the abdominal muscles, especially the *recti*, strongly upon the stretch, thus inviting a copious flow of blood into their capillaries, while at the same time, by irritating the muscles about the hip and perineum, and the *psoas* and *iliacus*, it stimulates the nerves of the lumbar and pelvic plexuses.

“The next consists in a rapid rotation of the entire trunk upon the pelvis, bringing all the muscles of the lower part of the trunk into play, and subjecting the pelvic viscera (or organs) to alternate pressure and relief from pressure. It promotes activity in the portal circulation (the liver), and stimulates peristaltic action. It is accompanied with firm pressure upon the stomach and in the lumbar region, the former with a view of stimulating the solar plexus, and the latter the lumbar nerves.

“The next movement is entirely passive, the patient standing, while the operator slowly and firmly strokes the colon in the direction of its vermicular wave; (the process of pressure or kneading, described on the next page) its primary object being to accelerate the passage of fecal masses and flatus (gases) through that portion of the canal, and its secondary object to stimulate its rhythmic contractions.

“The seventh produces extreme erection of the spine, thus affording increased space for the ab-

dominal organs, usually compressed by improper attitudes.

“ The eighth movement is the movement-cure blue pill. The patient takes such an attitude as shall place the muscles of the right side strongly on the stretch (bending the body to the left), and the operator then produces a rapid vibration of the parietes (or walls) of the chest and abdomen immediately over the liver. The effect is to relieve congestion of that organ and excite a healthy flow of bile.

“ Finally, the patient lies upon the back, and a thorough kneading of the abdomen is given, followed by pressure and vibration (or slapping) over the solar plexus (in the vicinity of the stomach). The circulation of all the abdominal viscera is thus stimulated, the passage of both chyle and faeces through the alimentary canal is aided, healthy secretion is promoted, undue accumulations of mucus are dislodged, and the great nervous centre of the organic system is roused into the highest state of activity. *There are very*

few cases of constipation, however obstinate, which will resist a fortnight of this treatment daily, and many cases will yield in a week. The time occupied in carrying out this prescription is about an hour." The last sentence of this article, which I give in *italics*, will explain my reason for giving you the paper in full. This prescription can be more easily carried out than you imagine. Do not read the directions cursorily or hastily, lest you may forget them; read them carefully and commit the different movements to memory; the wife can then assist the husband, the husband the wife, the mother the daughter, the father the son, and so, by a course of mutual aid, this scourge of constipation may be removed from a whole family.

I have said what I have about exercise because what I tell you is not only pertinent to your general health, but it will also have an influence on your bowels.

Friction with a coarse towel over the abdomen will have a tendency to stimulate the bowels to action, and should always be practiced. Dr.

Birch, in his work on "Constipation," recommends pressure or kneading over the abdomen, to be made as follows: Commence low down on the right side, and press gently, but firmly, with your hand, and draw it upward until you reach the lower border of the ribs, then cross the abdomen to the left side and descend to the lowest possible point. This is the course taken by that portion of the bowels which I have described to you as the large intestine, and, by this pressure, you gently stimulate this part of the rubber tube to increased action, and so enable it to move along and finally expel its contents. This pressure should be practiced twenty or thirty times, morning and evening, and in connection with the other measures I have or will indicate.

A cold bath in the morning will be beneficial to some people, and many claim for it a high rank among practices calculated to stimulate the bowels to action. Try it, and if it agrees with you, persevere in it. If, however, you feel badly after its use; if the surface of your body feels

chilly and looks blue, make up your mind that a *cold* bath is injurious to you, and abandon it. You may then substitute for it the following procedure: Wring a towel out in *cold* water and lay it over the surface of your abdomen for a few minutes; in other words, take a *cold* abdominal bath; in many cases this will sufficiently stimulate the bowels to cause them to act, while you will escape the bad results to your system at large which the *full* cold bath might produce. In other cases the same procedure, substituting *warm* for *cold* water, will prove efficacious.

We now come to a very important factor in the promotion of regularity of evacuations from the bowels. *Diet or Food.* Some articles of food, as you no doubt are already aware, will have a tendency to produce costiveness, while other articles will promote regularity of action. I have already advocated the use of oatmeal, and bran bread, and the like, and told you how they act. Let us now examine this very important matter of diet more fully, and see of how much benefit

a correct knowledge on this subject may be to you. Fruit is an exceedingly potent agent in this connection. It contains nature's purgative. But here, again, we must use judgment. You all know the saying about fruit: "*In the morning it is as gold; silver at noon, and lead at night.*" I have in my mind, while writing, a case in which this saying is almost literally true. In this case, an apple or any kind of fruit eaten before breakfast, and followed by the glass of water already recommended, invariably produces a full and copious passage immediately after breakfast; but if this same person should eat an apple just before going to bed, it will lie on his stomach like lead, and ten chances to one he will lie awake half the night, tortured with dyspepsia. So, my costive friends, cultivate a habit of eating fruit of some kind before breakfast; let it always be placed on the table, and let it constitute the prologue to the meal proper; but avoid it at night. To those who can make a choice I would recommend an apple or an orange; if you cannot choose, use

any fruit you can procure. Stewed prunes, apple sauce, stewed rhubarb, rhubarb pie, grapes, bananas, peaches, figs, dried apples, evaporated peaches, sliced peaches with cream and sugar, strawberries, raspberries, blackberries. Take your choice. If you do not like one, try another. Remember one thing, no matter what you try. Do not eat fruit for one day, and then, because your bowels are not moved, get disgusted, say there is no merit in its use, and give it up. Persevere ; you know that in everything success is the reward of perseverance, and here this rule holds good, as much so as in anything else. Cultivate the habit, persevere in its use throughout your life, remember the coaxing and the necessity for regularity about which I have told you, and, ultimately, success will be yours ; your bowels will be regular, and your health much improved.

We are very funny people in this world ; what great exertions we will undergo ; what laborious hardships persons will sometimes undertake of their own free will ; and yet if you were to en-

deavor to force these same people to do these same things, they would rebel, and it would be impossible to get them to do as you would desire. And all through the perverseness of human nature. What we desire to do is easily and pleasantly done, while if some one else compels us to do the same thing against our inclinations it becomes irksome, and assuming the shape of something we do not want to do, it becomes hard labor. So with this very matter of eating fruit. Nearly every one considers fruit as a luxury, an article to be sought after; but when they come to look on it as something suggested to them by another, as a medicine, I doubt not that many of my readers will turn from its use with distaste and cast it aside. Let me beg such people to be more philosophical; let me ask them not to let my recommendation of its use alter the flavor of the fruit for them. It will do them much good, and let me urge them to use it. A sufficient amount of water taken into the body is a requisite of regular evacuations. Because, if

you do not have enough water to properly soften and dilute the contents of your bowels, the mass therein contained will be so hard and dry that your bowels will find it hard work to move it along, and when it is finally expelled it will cause you much pain; because, not being properly diluted, the dead tissue has accumulated in a large, dry, and hard mass, which so distends the end of your bowel in passing from it as to cause much pain, sometimes amounting to positive agony. You all know that if you attempt to swallow a mouthful of food, without first allowing it to be thoroughly mixed with the saliva in your mouth, how it will stick in the throat, and how difficult it will be to swallow it, and how much pain this act will cause you. Well, I have already told you that the bowels are but a prolongation, a continuation of the throat, and if the matter in the bowels be hard and dry, this same trouble and pain in its movement along this tube will be experienced, only it will be increased, insomuch as while the throat is only about a foot and a half

long, the bowel is about twenty-five feet. So if your passages are large, hard, and dry, and cause you much pain, and if you partake sparingly of water, use it more freely. But be sure that in relieving your constipation you do not produce still greater ills; in other words, be sure that the water you use is pure and clean. If you have the slightest reason to suspect its perfect purity, *boil* and *filter* it before using. Some persons, and particularly women, have a bad habit of drinking *tea*, and these women will say that in this tea they take water into their bodies; so they do; but in the large majority of cases this tea will cause indigestion, and, therefore, I cannot recommend its use.

Some forms of alcoholic liquors will have a tendency to move the bowels, such as beer, hock, cider, perry, and so on, but their use will ultimately make matters worse, because, by deranging the liver and stomach, as they sooner or later will, they will only serve finally to confirm the costive habit.

With some people milk is very constipating. If it has this effect on you, and if it agrees with you in other respects, try whether you cannot use it and obviate the constipating effects by the means I have indicated. If in spite of these agents the milk continues to keep you costive, you had better place it on the proscribed list. All fresh and green vegetables should be freely used by costive persons. The Almighty furnishes to us, in them, nature's purgative, and their use cannot be too highly commended. For many hundred years the world prospered on their use, and was surely not the loser, and most probably the gainer. The cupidity and invention of man has at last furnished to us the various canned vegetables now offered for sale. They gratify the palate in winter, when snow covers the ground and fresh vegetables are a thing of the past, but I am quite sure that at the same time they give rise to and maintain many cases of constipation.

Dr. Beale recommends, as very efficient in many cases, a small cup of sweetened black coffee,

before rising. Try it. Let me sum up by quoting from Dr. Beale's work. He says: "A liberal allowance of meat and a too highly nutritious diet favor constipation ; on the other hand, various kinds of fruit and many soft vegetables tend to prevent and relieve constipation." In conclusion, let me tell you that if you are constipated, and have been so for years, and if, after reading this little book, you come to realize and appreciate the necessity of regular evacuations, and make up your mind to use the means I have indicated to procure them, if at first you fail, try, and try, and try again ; but if you do not at first succeed, do not get nervous and fidgety ; you will make matters worse. If you have been costive for years, a few additional days of this habit will not work you very much additional injury, while serenity and evenness of mind will do much to overcome it. To use my favorite simile : if your stove becomes choked with ashes, it will do you no good to fret and fume about it ; but if you quietly and calmly set to work and remove the

ashes, put in fresh coal, and apply the vital spark or match, your fire will soon be as good as ever. So quietly and philosophically use the proper means to remove your human ashes, and to secure their daily and regular discharge, and your vital fire will ultimately burn as bright as ever, even though the flame may for years have been smothered beneath a foul mass of rotten débris. Hoping I may have made clear, even to the least intelligent mind, the means by which they may assure this daily regular and complete purification, I give you this little book for what it is worth.

HOW PERSONS WITH

BRIGHT'S DISEASE OUGHT TO LIVE.

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*With the hope that it may convince
him that the seeds which he
planted have not fallen
on barren ground, this first public fruit of his
teaching is affectionately and respectfully
dedicated by the author to his
~ friend and former
preceptor,*

Dr. Walter F. Atlee.

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PREFACE.

The necessity for this little work has been suggested to the author by many considerations: among them—

1. The great prevalence and fatality of Bright's Disease of the Kidneys.
2. Its insidiousness; the disease in many cases becoming irrevocably fixed and far advanced before it develops symptoms of sufficient importance to induce the patient to seek professional advice.
3. The fact that in many instances a person with a well marked case can, by leading a proper life, live in comfort and comparatively good health for many years.
4. That very few diseases are so liable to be aggravated by neglect of hygienic rules.
5. That being, as a rule, a protracted disease and one in which but little discomfort is experi-

enced until toward the end, the advice of the physician is apt to be neglected.

These and other considerations have induced the author to give, in this small work, in familiar, non-professional and easily understood language, a little history of this disease and some rules of life the faithful observance of which will insure to the sufferer *from this disease* the longest lease of life and the greatest amount of health of which he is capable. If repetition may render the reading tiresome, I will say that all the precepts which are repeated are of very great importance, and that this very repetition will serve to impress them the more firmly on the mind.

JOSEPH F. EDWARDS.

Lansdowne, Del. Co., Pa.,

October, 1880.

HOW A PERSON THREATENED
OR AFFLICTED WITH
BRIGHT'S DISEASE OUGHT TO LIVE.

PART FIRST.

GENERAL REMARKS.

There are several diseases of the kidney, differing in the appearances which the organ presents after death, but so similar in their symptoms, progress and result, that they are generally grouped, and, indeed, are only known to the non-professional public, under the generic term of “ Bright's Disease.” This disease has received its name from Dr. Richard Bright, of London, who, in the early part of the present century (1828), added much to the previously limited knowledge of this affection. This disease no doubt existed prior to the time of Bright, and has probably existed for many years. In the older records of death we find many cases set down as occurring from causes *unknown, suddenly, or from some cause which can*

be attributed to Bright's Disease ; therefore, it is but fair to infer that some of these deaths may have been due to the disease under consideration ; but the means of recognizing its existence being but little understood before the time of Bright, and certain cases not presenting the symptoms of any other disease, have been set down as *unknown*.•

Many people, and even some physicians, have a bad habit of confounding a symptom of disease with the disease itself. For example, you often hear of a person dying from dropsy ; now dropsy is not a disease in itself, but only a symptom of disease of some organ. Thus a contracted liver will press on the blood vessels passing through it, and interfere with the free passage of the blood, while the heart, acting from behind, will force the blood against this obstruction ; now you can readily understand how this will cause a damming up, a congestion of the blood, and some of its water (seventy-nine per cent. of blood is water) will ooze out through the walls of the blood vessels into the surrounding tissue, and we have dropsy ; but you see the disease is really seated in the liver, while the dropsy is only a symptom. Again, you will often hear of a person dying of

convulsions. Here, too, the convulsion is only a symptom of the disease which causes it, and not really a disease in itself. Thus, in many cases of Bright's Disease the urea which is retained in the blood, being carried through the circulation to the brain, will irritate this organ and cause convulsions, and the patient may die in one of them. Here we really have death produced by Bright's Disease of the kidney, but the convulsion being the most prominent symptom, and the other manifestations being comparatively slight, they are lost sight of, and we have the effect given as the cause, and death attributed to the convulsion. Now, when we consider that this error is very common at the present day, as evidenced by the fact that in the Report of the Board of Health of the City of Philadelphia, for 1879, there appear 626 deaths from *convulsions*, for which no cause is assigned ; and remembering how little the physicians of the last and the early part of this century knew about the symptoms of Bright's Disease, does it not seem very likely that some of the cases of death which were then returned as due to sudden or unknown causes, to dropsy or convulsions, were in reality due to this Bright's Disease? Now, I tell you this

in order that you may understand some deductions I am going to make, by which I hope to prove to you, conclusively, that while this disease has probably existed for a long time, yet the number of cases has increased most alarmingly during the last few years. The earliest record which I can find of deaths in the city of Philadelphia is in the shape of a small, time-worn and stained sheet of paper, about the size of a page of foolscap, which contains the births, marriages and deaths occurring in "*Christ Church Parish*," kept by Michael Brown, clerk, and Charles Hughes, sexton, and bearing the date 1740. Here I find a total of deaths amounting to 165. There is no mention of any disease of the kidney. Fourteen deaths are recorded as occurring from convulsions and two from dropsy. These earlier records are very imperfect and are of very little use, further than to show that this disease must have been very uncommon in those early days, as no mention of it occurs. Therefore, we will pass by these imperfect ones, and come down to 1807, the first year in which the "*Board of Health*" makes a report. What do we find?

During the ten years from 1807 to 1817 there is

"no record of any death from Bright's Disease." But I am going to be liberal and allow that some of the deaths which were attributed to *symptoms* which we now know to be prominent effects of Bright's Disease were in reality due to this disease itself, the existence of which had not been recognized, for the reasons I have given you. Thus, during these ten years I find recorded 1651 deaths from *convulsions*; now we will deduct from this number 1414, which occurred in patients under five years, because nearly all of them are sure to have occurred from teething, from disordered digestion, or from some of the ordinary diseases of infancy and childhood; leaving us 237 deaths from convulsions, the real disease causing the convulsion being unknown, or, at least, not given. During the same period I find 463 deaths from dropsy, cause of dropsy not given; 304 recorded as *sudden*, no cause assigned, and 277 from unknown causes. Now, we will add these together, and we have a total of 1281 deaths from causes not satisfactorily stated. Now, both convulsions and dropsy are oftentimes very prominent symptoms in the last stage of Bright's Disease, and as I have already told you, death

often occurs *suddenly* in this disease, without any previous intimation of its existence. Therefore, death may have occurred from this disease, when physicians had very little knowledge of its symptoms, and have been ascribed to *Dropsey*, to *Convulsions*, or to *sudden or unknown* causes. Let us then allow that ten per cent. of these unsatisfactory cases were in reality Bright's Disease. This is a liberal allowance, and is based on the percentage of deaths from consumption, by far the most fatal of all diseases. Ten per cent. of 1281 will give us $128\frac{1}{10}$ cases, which may be ascribed to Bright's Disease. The total number of recorded deaths for these ten years was 20,316; this would give us a fraction over six deaths in every thousand as due to Bright's disease. Let us now make a big jump and come down to our own times. During the ten years from 1869 to 1879, I find recorded a total of 162,123 deaths in this city. Until the year 1874 there is no mention of "*Bright's Disease*;" but a cause of death is set down in many cases, which is a prominent symptom of this disease and does not occur in any other affection, while in many other cases a different name is given to this disease. For, let me

tell you, many of the common diseases have several names, unfortunately, and the physician is at liberty to choose that which suits him. Therefore, these deaths can, beyond doubt, be ascribed to those affections of the kidneys which we know under the comprehensive term of Bright's Disease. For all practical purposes, this name may be applied with good reason to all of them, as they are all capable of being produced by the same causes, are subject to the same hygienic laws, and generally have the same termination. For some reason, unaccountable to me, some physicians are opposed to calling this disease *Bright's* Disease, objecting on general grounds to the naming of any disease after an individual. We name our streets, our cities and our public buildings after distinguished citizens, and I cannot understand why we should not honor the memory of a man who has contributed in a particular manner to the advancement of our noble science, by adding greatly to our knowledge of any particular disease, by naming this disease after him. Of course, for scientific discussion, it becomes necessary to distinguish between the different forms of Bright's Disease, and hence a sub-division of nomenclature becomes

imperative; but for ordinary use and for non-professional purposes the name of Bright's Disease seems very appropriate. Thus, some physicians record death as occurring from *Uræmia*, which means a poisoning of the system from the retention in it of the urea which the kidneys should have removed. So uræmia is the immediate cause of death, but the *disease* which has produced the uræmia is *Bright's Disease*, and why not say so.

To go back to my subject; I say I find recorded for the ten years given above a total of 162,123 deaths. Now, of this number 2328 can be set down as due, beyond a doubt, to Bright's Disease, thus giving us a fraction over fourteen deaths in every thousand from this disease. For the benefit of any physician who may read this book, I will give a list of the cases which I attribute to Bright's Disease:—

Albuminuria,	161
Congestion of the kidney,	8
Degeneration of the kidney,	24
Fatty degeneration of the kidney,	23
Inflammation of the kidney,	260
Uræmia,	366
Disease of the kidney,	572
Bright's Disease,	914—2328

Now, if we take the cases of death from dropsy, convulsions and unknown causes, as we did from 1807 to 1817, we will find a still greater increase; thus, during these ten years there are recorded 608 deaths from convulsions in people over five years of age, 1839 from general dropsy, and 588 from causes unknown, giving us a sum total of 3035. Now, if we attribute ten per cent. of these deaths to Bright's Disease, we will have 303 to add to the 2328, making 2631 deaths which, in all probability, were due to Bright's Disease, giving us a fraction over sixteen deaths in every thousand from this disease; thus showing an increase of two and two-thirds as many cases of death from Bright's Disease, in proportion to the total death rate, as we find from 1807 to 1817. As an additional evidence that some of these *unknown* deaths were due to Bright's Disease, let me tell you that the cases recorded as *unknown* decrease as the recorded cases of this disease increase (with the exceptions of 1870 and 1877) as the following table will show:—

	Bright's Disease.	Unknown.		Bright's Disease.	Unknown.
1869	140	90		1874	195
1870	154	117		1875	299
1871	182	116		1876	296
1872	208	47		1877	288
1873	211	39		1878	342

The apparent exception in 1876 may be explained by the presence in the city of so many strangers, many of whom, no doubt, died very soon after coming under the charge of a physician, before he had a chance to make a diagnosis, and a post-mortem examination being impracticable, the case had to be returned as due to an unknown cause. You will understand this when you read further on and see what my experience was in the Philadelphia Hospital, with this disease. This same relative increase and decrease I find to hold good, with the recorded cases of convulsions in persons over five years of age and of dropsy.

The above table contains another very instructive point. You will notice that the mortality from Bright's Disease in 1869 was 140, while in 1878 it was 342, nearly two and a half times greater, while the total mortality in 1869 was 13,428, and in 1878, 15,743, an increase of only 2315, less than one-sixth.

This is really the most instructive and most incontrovertible point I have given you. There is no theory or speculation about this statement, but stubborn and undeniable facts and figures here show an enormous increase in the proportion

of deaths from this disease, even in the last ten years.

I could go on multiplying statistics indefinitely, but I feel sure I have already given you enough to satisfy you beyond any question of doubt that this formidable disease has become much more frequent of late years, and is steadily and rapidly on the increase. I desire to show you this fact and to explain to you the cause of this increase, in order that you may understand the means and realize the necessity of reducing its terrible frequency.

When you have read this little work through, if you think over it for a few minutes, you will realize that all the instructions and advice which it contains can be resolved into the single short precept, "*Live properly;*" live so that every organ in your body will have its own proper amount and kind of work to perform. Now the most powerful cause of this disease is the neglect of this maxim. It is not a so-called inevitable disease, such as some of the fevers, but is much under our control. Exposure, over-work, abuse of our various organs, by over-eating and drinking, and, in a word, neglect of hygienic rules,

will cause it. While, on the other hand, a strictly proper life in every respect will do much to retard its increase. Suppose it is an hereditary affection, and may be transmitted from parents to their offspring ; we all know that consumption, that most particularly hereditary disease, may, in many cases, be rendered torpid and quiescent, and its development be stayed, by a proper and careful life. To point this, let me tell you that Bright's Disease is much more frequent and more fatal among men than among women ; and I need not tell you that men are more exposed to mental worry, over-work, disordered digestion, from irregular eating, excessive drinking, late hours, the use of tobacco and almost all injurious agents, than women. Again, it is much oftener observed among adults than among children, for the same reasons. I will tell you, further on, that a weak kidney is like a weak boiler ; if you do not put too much strain on it it will bear the pressure, but if the strain be too great, it will explode ; and I will tell you that a neglect of the laws of health will have the same effect on a weak kidney, predisposed to disease, that a steam pressure of two hundred pounds will have on a boiler capable of

withstanding only a pressure of one hundred pounds, namely, neither one of them can properly perform their duty, and must, beyond question, give out.

No doubt many of the sudden deaths which occurred prior to the time of Bright, and were attributed to apoplexy, heart disease or *unknown* causes, were in reality due to the unsuspected presence of this disease. Because, so insidious is its course in many cases that its existence is not even suspected; sometimes for many years. Let me illustrate this insidious nature of Bright's Disease by relating to you a few actual cases.

CASE I.—A lady, in apparently good health, who rarely complained, and then only occasionally, of some slight and transient ill-feeling, as nearly every one does at some time or other, took a long walk one day with her husband, and upon returning home (feeling particularly well), went to her room to remove her bonnet, and while standing in front of the bureau, fell to the floor in a convulsion, followed by twenty-four hours of unconsciousness and death without a return to consciousness. A post-mortem examination revealed Bright's Disease.

CASE II.—A young married man for years suffered from dyspepsia; he consulted many physicians, who prescribed for his indigestion; dissatisfied with the non-success of their treatment, he would consult a second doctor before the first had time to suspect any organic disease as the cause of dyspepsia. After suffering in this way, and having had no other symptoms of disease, for several years, he awoke one morning to find a very slight swelling, scarcely more than a puffiness, under one eye. On his way to the city he consulted a country physician, in the small village in which he lived. The doctor asked him if he had any kidney trouble. He scouted the idea. Well, said the doctor, you had better see your physician when you reach the city, and direct his attention to your kidneys. An examination revealed an advanced case of Bright's Disease, and in less than a month he was dead.

CASE III.—A lady of over sixty, previously in apparently very good health for one of her age, had an attack of rheumatism. For many years she had been afflicted with similar attacks. After the rheumatism left her she seemed exhausted; she did not regain her usual vigor, but had no

well defined symptoms of any disease. An examination revealed Bright's Disease, and she died in three days.

CASE IV.—A man of thirty years of age, in apparently good health, complaining of no disease, said, one evening, in conversation with a physician, "Is excessive sleepiness indicative of any disease?" An examination revealed a pronounced case of Bright's Disease.

CASE V.—A married man of thirty-five complained of nothing, yet his wife thought he did not look well; he had a pale, tired look, though he was actively engaged in professional pursuits. She persuaded him to consult a physician, and Bright's Disease was the verdict.

CASE VI.—A young man of eighteen, in apparently fair health, complained of indigestion and general weakness, but no definite symptoms of any form of disease. A visit to his physician resulted in another case of Bright's Disease.

Let me give you one more case. A young man of twenty-two, in previously good health, to all appearances, was taken suddenly sick, and disease of the liver was the diagnosis. He was treated for this for two weeks, and not getting better, I

was called to see him. The only symptoms of disease were great weakness, cramps and loss of appetite. His peculiar appearance made me suspect Bright's Disease, and an examination revealed a pronounced case. Careful inquiry from his family failed to elicit any previous symptoms of disease, except a very pale complexion, though the disease must have existed for some years.

During my term as resident physician in the medical wards of the Philadelphia Hospital, it was a common occurrence for an ambulance call to be received from one of the down-town station houses. Upon reaching the place designated, we would be shown a man or woman who had been found unconscious on the street, and supposed to be intoxicated. He would be removed to the Hospital, where he would linger unconscious for twenty-four or thirty-six hours and then die. In the majority of these cases a post-mortem examination would reveal Bright's Disease.

I have given you these instances because I wish to show you that very often this disease may exist and yet the symptoms which it presents to the person so afflicted may be so slight as to cause him to neglect professional advice.

Let me here, in the beginning of this little book, enunciate a very valuable rule. If you ever experience a departure from *perfect* health, no matter how slight this departure may be, and if your symptoms do not indicate disease of any organ, but seem merely to be the temporary result of some excess in eating or drinking, work or exercise, or some slight exposure ; if these symptoms continue for any time after the removal of the cause, ask your physician to make an examination of the condition of your kidneys. If they are not diseased, so much the better ; if they are, it is well for you to know it at once, because I will tell you now (and tell you why later), that a person with weak or diseased kidneys can, by leading a careful life, enjoy very fair health, perform a reasonable amount of work, and attain a respectable degree of longevity ; while on the other hand (as I told you in my preface), very few diseases are so strongly influenced for the worse by a reckless and careless life as the one under consideration.

PART SECOND.

THE FUNCTIONS OF THE KIDNEYS AND
THEIR DERANGEMENTS.

In order that you may understand and be induced to follow the mode of life here recommended, I will now tell you, in plain language, divested of all technicalities, some little about the kidneys and the duties which they *ought* to perform.

The kidneys, two in number, are situated in the *small* of the back, on either side of the backbone. They are small, but most exceedingly important organs. If they were removed from the body it would be utterly impossible to support life. They are among the principal scavengers of the human body. You all know that particles of our bodies are continually dying, their places being supplied by new particles, resembling the old ones, and derived from the nourishment which we take. Now, these dead particles undergo a process of decomposition in the blood, just as our

bodies in mass will do after the final death, and are then removed from the blood through the agency of certain organs, which act as purifiers, so to speak, removing all dead and decomposed particles from, and thus purifying, the blood. Prominent among the products of this death and decay of tissue stands a substance called *urea*. The chief duty of the kidney is to eliminate this *urea* from the blood and carry it out of the body as the principal ingredient of urine. This is the only function of the kidney with which we have to do, as all the trouble in Bright's disease may be principally attributed to the non-elimination of this *urea* and to mechanical interference with the circulation of blood in the kidneys. Now, if disease so interferes with and cripples these organs as to prevent them from removing the *urea*, what becomes of it? The death and decay of tissue continue, whether the kidneys be weak or strong; it must go on as long as life, for it is this very destruction and renewal that constitutes life. When the renewal ceases and the destruction predominates, decay of life and death result. So, with the continued destruction of tissue, there is continual formation of *urea*, and if it cannot be

removed from it must accumulate in the blood. Now, everybody knows that the blood circulates throughout the entire body, and if contaminated with *urea* it must carry this poison to every tissue which it nourishes, and so impress them unfavorably by its presence. That is just exactly what it does do. Then, no doubt, you will wonder why such general poisoning does not produce more marked symptoms, and why the existence of a disease which causes such general evil is not made more manifest. This is due to the law of tolerance. A perfectly temperate man will be affected by one drink of liquor; by degrees, he can drink more and more without feeling it, until eventually he can consume enormous quantities without apparent effect. So it is with everything else. A continued use of any poisonous agent, commenced in small doses and gradually and slowly increased day by day, will eventually breed such a tolerance that enormous quantities, a fraction of which would prove fatal to the novice, can be taken with impunity. I once had a patient under my charge (who, by the way, was suffering with Bright's Disease) who could and had taken daily sixty grains of morphia, with but little effect, when

I should hesitate to order half a grain for one unaccustomed to its use. So with the accumulation of the urea. When the disease in the kidney commences the integrity of the organ is so little affected that it performs its duty *almost* perfectly, and only a very small quantity of urea remains in the blood. Day by day, as the disease advances, the quantity of this poison that is retained slowly increases, the system becoming, in the meantime, accustomed to its presence, and presenting no marked symptoms of revolt against its unwelcome tenant. Finally, the point of forbearance is reached and passed. The large accumulation of urea in the blood explodes, as it were, to use a familiar word, and we have convulsions and death. You can now understand why I call Bright's Disease an insidious affection. You can also appreciate how apt a person would be not to consult a physician, imagining his bad feelings to be merely the result of fatigue. You can, at the same time, see how a course of life which would throw as little work as possible on the kidneys would tend to longevity. I once heard an eminent physician compare the situation of a man whose kidneys are diseased to a ship at sea which has sprung a-leak.

As long as she encounters fair winds and weather she is all right, and will probably reach port in safety, if her pumps hold out. But let her meet a severe storm, or let her crew become too much exhausted to man the pumps, and she will surely founder. So it is with a man whose kidneys are diseased. So long as he leads a careful life, putting but little strain upon these weakened organs, so long may he live in very fair health and comfort ; but let him be imprudent and reckless, let him pour a tempest of abuse and neglect upon his poor kidneys, and they will surely succumb to the strain.

PART THIRD.

ABOUT BRIGHT'S DISEASE (WHAT IT IS.)

Bright's Disease, in all its forms, is essentially an inflammation of the kidneys. They contain more blood than in health. In some forms the kidney, at first enlarged, afterward becomes contracted. Its tissue, pressing on the numerous blood vessels which pass through the organ, interferes with the free passage of the blood through them. This backward pressure on the current of blood being met and opposed by the onward pressure of the powerfully acting heart, the watery constituents of the blood are forced through the porous walls of the blood vessels, usually of the feet and legs, and so we have the dropsy produced which is frequently present in the advanced stage of this form of the disease. Again, this backward pressure causes so much strain on the heart in its efforts to overcome it, that we sometimes have enlargement of the heart as a secondary effect of Bright's Disease. This pressure will sometimes

cause the watery parts of the blood to ooze out into the small cavities in the lungs, usually filled with air, and death will ensue, from a gradual suffocation. Let me here digress, to tell you that this mode of death is not attended with great suffering, as many would suppose; on the contrary, it is painless and even pleasant. I will tell you why. In the first place, let me tell you that all pain is felt in the brain. If you cut your finger, the nerves of sense, immediately and with the rapidity of lightning, convey the news to the brain, and the pain is there experienced, though the sensation of pain is referred to the seat of the injury. To make this still clearer, if you had no brain your body might be cut in two and you would not feel the slightest pain, even though you had life, for it has been demonstrated by experiment that life is possible even after the removal of certain portions of the brain in which sensation resides. Secondly, in order that the brain may be able to receive sensations of pain, or of any kind, it must be in a state of activity, and to be so it must receive good nourishment, from pure blood, containing a sufficient proportion of the life-giving oxygen. Now, when this water oozes

out into the cavities in the lungs in which the air usually is, you can understand that the oxygen cannot get into the lungs, and so cannot enter the blood. Now, as the particles of our body die and decay, some of them assume the form of carbon, and as such are carried in the blood to the lungs, where they meet and unite with the oxygen to form carbonic acid, in which shape they are carried out of the body in expiration. If oxygen cannot get in, of course, carbon cannot get out, and must remain in the blood, to poison it. Nearly every one is familiar with the effects produced by inhaling the fumes of charcoal. Well, here we have the same thing. At first, when the water commences to ooze into the lungs, a very small amount of carbon only is compelled to remain in the blood, and being carried to the brain by the blood, it serves to stupefy it, as it were, to render it incapable of feeling pain, only, however, to a slight degree. As more water oozes out and less room is left for the oxygen, of course more carbon remains in the blood, and the brain is rendered more torpid, less sensible of suffering, until finally, when the difficulty in breathing has reached that point which would

prove very painful to a person in health, the brain is so overcome and clouded by the carbon that the patient fails to feel any suffering, though to those standing around he may seem to be suffering most intensely. The urea retained in the blood may accumulate in such enormous quantity as to finally poison the brain and cause convulsions, or acting more gradually on the brain, may produce unconsciousness, blunting one sense after another, as it travels from the upper portion of this organ downwards, until it finally reaches and contaminates that portion of the brain from which arise the nerves that convey the power to the heart to move, and to the lungs to breathe, and the unconscious and insensible patient quietly ceases to breathe, his heart stops pulsating and the curtain noiselessly drops on his drama of life.

I have now hastily given you the functions of the kidneys; how they are affected in Bright's Disease; the result of these irregularities in action, and the usual modes of death. I now come to the kernel of this little work. I will now tell you how a person threatened with this disease may postpone its development, and how one in whom it has already appeared may retard its pro-

gress. First, let me again repeat what I have already said: that this disease is greatly influenced for better or for worse by our own actions. We have, to a certain extent, in our own hands the power to shorten or prolong our lives. The person with Bright's Disease may, by pursuing a correct life, outlive thousands of those around him at present in vigorous health. He may live many years and ultimately die of some other disease. Neither is it necessary that he should live the life of a confirmed invalid. He can work and can enjoy life, within certain bounds, as well as any one else. But he must always be careful. The object of his life must be to put as little strain as possible upon his kidneys. Further than what I have already said of the symptoms of this disease I will not go. The diagnosis comes within the province of the physician, and it is not my intention to supplement him. A good physician is a great gift bestowed upon man by an all wise and benevolent God; and let me here strongly advise you to immediately consult some *good* doctor upon the first intimation of the approach of this disease, and to follow his advice implicitly. So, if any of my readers have felt unwell, low-spirited and

weak, for some time, without any definite symptoms, let them find out whether or not they have Bright's Disease.

This disease may be divided into the acute or rapid, and the chronic or slow forms. The acute type we have nothing to do with here, because its symptoms are usually so marked and well developed as to require the calling of the physician. It rapidly runs its course and terminates either in death, complete recovery, or by degenerating into the chronic form, the special subject of this little book.

PART FOURTH.

RULES OF LIFE.

I hear some people asking me what I mean by a *predisposition* to Bright's Disease. It has not yet been set down in medical works as an hereditary affection; though I believe the day is not far distant when it will be so considered, just as consumption and scrofula are at present. I will illustrate my meaning by an example. I know a family in which both parents and two sons have died of this disease; of four surviving sons, three, and of two daughters, one, are now afflicted with it. Two young children of one of the sons who died have it. Now, I would say that, in all human probability, those members of this family who have not the disease already have a predisposition to it; their kidneys are their weak points, so to speak, and any deleterious causes acting on their systems would probably produce kidney disease. Hence, these members should so live as to protect their kidneys as much as it lies in their power.

They should avoid a sedentary life as far as possible, as well as mental worry, and should indulge in mental work or brain effort only to a moderate degree, preferring an out-door, active life, and plenty of exercise and motion in the pure, fresh air, to an occupation confining them to the foul atmosphere of a city house. They should, however, carefully avoid overtaxing their physical strength, for while excessive mental action is very injurious, excessive physical labor is only a little less so. Many intelligent people unconsciously fall into the very natural error that great physical exercise is beneficial to health, and that the more they take of it the better. While this is true, within bounds, as far as a person in vigorous health is concerned, it is not so for one whose kidneys are diseased, for the following reasons: It is one of the functions of the kidneys to remove the results of the death and decay of that certain class of tissue whose predominant constituent is nitrogen. Now, muscular tissue is very rich in this element. Every motion of a muscle causes the death and decay of some of its component parts; hence, you can understand how excessive muscular action will result in an excessive produc-

tion of dead and decayed elements, rich in nitrogen, which must be removed by the kidneys. So you will see that the work to be performed by these organs will be in proportion to the use which we make of our muscles. At the same time, a moderate amount of muscular exercise will give tone to and improve the general system, will exhilarate the circulation and keep the skin in proper action, the importance of which you will see further on, and will thus redound to the benefit of the weak kidneys. Hence, I would enunciate, as a general rule, applicable to the great majority of cases of Bright's Disease, where the strength has not been too much reduced, that while a walk of three or four miles will be of positive benefit to the kidneys, one of ten miles will be injurious, as it will throw too much labor on them in removing from the body the decayed products of this amount of muscular exertion. Excessive mental work is forbidden in this disease, not so much because it is injurious in itself to the weak kidney, as on account of the sedentary, in-door life, its usual accompaniment, which, by depressing the general system, reacts unfavorably on the kidneys. A considerable amount of brain work, performed in

the open air, varied with a proper amount of physical exercise, can be borne with impunity. Persons afflicted with this disease should endeavor to select a healthy medium in both. Let me suggest a daily routine, which will probably come as near being correct as possible for the average man or woman fond of mental work. Suppose he should arise at seven o'clock: let him breakfast and leisurely read his morning paper. Then let him devote himself, say from nine until twelve o'clock, to his mental work; at the end of each hour intermitting his labor for five minutes' light exercise. Then, for two hours, until dinner time, let him amuse himself with some *out-of-door* occupation. After dinner and a short period passed in pleasant conversation or *light* reading, so as to allow digestion to fairly commence in peace and quietude, let him drive, ride, or walk, or engage in some *out-door congenial* exercise, from half-past three until five or half-past; then to his mental work for an hour, until supper, at half-past six. The evening to be passed in conversation or *light* reading. Go to bed as near ten o'clock as possible. Be sure to secure eight hours of sleep out of the twenty-four. To the earnest and ambitious brain worker four hours' labor daily

will seem very inadequate to accomplish what he desires ; but to such a person let me say, for his comfort and peace of mind, that, leaving all considerations of preservation of health out of the question, which really is the point we are discussing, the man who works *earnestly* four hours a day, with his mind vigorous and free from mental cobwebs, will accomplish *more* satisfactory work in the aggregate, than he who labors twelve or fifteen, with his mind weak and exhausted and his ideas confused, from over strain. The rest and exercise will refresh and rejuvenate his mind, and he will, each day, go to his work with a relish for it ; his perception will be keen, his mental appetite will be good and the *assimilative powers of his brain* will be vigorous and capable of receiving and storing away in its proper place, without confusion of ideas, all that his mental stomach may take in. For one reason or another, it would be next to impossible to induce a man to live by rule, and particularly by the rule of another, but for the sake of that health which we all *prize so highly* (when we do not possess it), let me beg my fellow creatures to catch my idea of leading a regular, moderate, temperate life in everything.

The whole secret of longevity (whether you are sick or well) lies in this moderation, temperance and regularity; and it is to show you in a plain way how to so live that I have undertaken this little work. Let me point what I have said by an illustration. Case No. 5, already quoted, occurred in a professional man. As soon as the presence of the disease was discovered his physician insisted that he should abandon his work and devote himself to the care of his health. Although an earnest lover of work and very ambitious, he followed this advice. He passed one winter in Florida, leading a life of recreation and amusement. He would drink sulphur water and bathe two or three times a week in the sulphur pool. The only medicine ordered was a general tonic for the whole system, to build up and improve the tone of the blood. He improved very rapidly. In a short time his appearance improved so much that his companions would ridicule the idea of his being sick, and called him the healthiest looking invalid they had ever seen. He slept well, ate well, digested well, and enjoyed life as much as the most vigorous man. He returned home in very good condition. For some three years and

a half he continued to follow his physician's advice. He worked but little, took much recreation, spent a great deal of his time in the open air, and continued to enjoy very good health. Finally, being induced by his continued well feeling to believe that his kidneys were in reality much better than they were, and being tempted by the prospects of great profit, he embarked on a business project which entailed great work and much mental anxiety and worry. In less than four months' time he fell back to where he had been three years before; in a short time his feet and legs began to swell, and after a few months' confinement to the house he died. Now, in this case his three years and a half of careful life did not really improve the condition of his kidneys; it did not remove any of the degeneration which had taken place, but it reduced to the minimum the amount of work which these organs had to perform, and so enabled him to live a comfortable life. Neither did he lead the life of a confirmed invalid; he enjoyed himself, and was careful merely to avoid excesses of all kinds, exposure and over work. Had he continued this mode of life he might have lived many years. You see

How rapidly an opposite course of life produced disastrous results. Let me here enunciate one great rule: "It is not mental *work*, but mental *worry* that kills." In the case just quoted the business venture referred to caused much mental anxiety, while the patient himself was of that nervous temperament, so that small matters worried him exceedingly. I could point you to a case where the patient has had infinitely more cause for mental worry than the one referred to, but being of a sanguine temperament the effect was not so marked, and he is to-day living, in fair health, though he has had kidney disease for some years. Still, however, the rule holds good for the sanguine as well as for the nervous temperament, that mental worry is particularly prejudicial and hurtful to the weak kidney. In the different temperaments, of course, the effect will vary in the rapidity with which it becomes manifest, but does not vary in the fact of its production. Most naturally, many persons will say: But if we have nervous temperaments and have cause to worry, be it of a business or a social nature, we cannot help but worry; we cannot control our feelings. Here you make a grave mistake. Your tempera-

ment and your feelings are more under your control than most of you suppose. It is true that your physician cannot give you any *drug* to control your temperament, but *moral* medicine, so to speak, here comes into play, and is a most powerful agent in enabling us to mould our dispositions and control our natures. Thus, without being a fatalist, it is very easy and very comforting for every one to believe that whatever may happen to them happens for the best. It is only necessary for them to believe in the existence of an all wise and all powerful Creator of everything and everybody; one who has the wisdom and the power to ordain that everything which happens is for best. Such a belief will do much toward producing a tranquil frame of mind, so important and so necessary to the maintenance of health and the promotion of longevity, and doubly, aye twenty times, more important in the disease under consideration. I cannot better describe to you what I mean by my *moral medicine* than by quoting to you from a letter which I have lately received from our distinguished and venerable fellow citizen, the Hon. Eli K. Price. It came to me in answer to a letter addressed to

him, asking for some of his rules of life, by which he had been enabled to reach such a degree of longevity and of activity, which I desired to use for another work I have now in course of preparation. He says, "A tranquil mind I find a requisite to health and longevity ; and that the mind may be stayed in a firm tranquillity, I have found a firm faith in an overruling Providence essential. My religious belief, inductively formed, has all the conviction of my understanding, as strong as that in all established scientific truths. All truths have come from the Creator, and all are his. God's attributes of might, justice and love, we must logically believe ; and without these and His absolute goodness we must infer Him and His creation to be failures. It is in believing Him to have these attributes ; in believing that He appeared in Christ to save immortal souls, and for that visits them, we can endure, and only so endure, the sufferings incident to life with firmness and equanimity, often emerging from afflictions with safety where others fail ; and thus fortified we may humbly hope and expect to reach the end in a faith that will be sustaining, and to pass into happiness, not less, but the greater for that well

doing which had made this life happy." Further on he says, "Some hours of every week, for twenty years, have, with pen in hand, been devoted to the study of the being of God, his attributes, and the significance of his works; of the nature and import of our being and destiny; until the product has become voluminous. Hence, I speak with the confidence of the absolute conviction that has sustained me through nearly all of life, that man has the help of a care and strength greater than his own. With such faith and 'a love that casteth out fear,' trials melt away before us; we live through them and see them as clouds that have passed, dispensing blessings, and in a hopeful confidence in God's care and love we live longer, better and happier, and even in death know a triumphant joy." I have given you the convictions of a gentleman, who being in youth, as he tells me, not particularly robust, yet has passed through a long and honorable life of great mental labor, and is, in his eighty-fourth year, still hale and active, engaged in the ordinary pursuits of life, taking an interest in all that occurs in the world around him, continuing to give legal opinions, and, in a word, is more useful than most men

of sixty. Now, after reflecting on what he tells us, can any reasonable man still insist that a tranquil frame of mind is impossible when he has cause to worry? Let all try, to the utmost of their ability, to do right, so far as the knowledge of the right is in them, and then, if things go wrong, let them attribute this *apparent* wrong to the all-pervading wisdom of the great Creator, and believe it to be for the best, and surely a tranquil mind and freedom from mental worry will be the result.

Any one suffering from or predisposed to Bright's Disease should reside in the country, where the air is pure and uncontaminated with the foulness of a large city. At the same time they should carefully avoid draughts and exposure to wet, damp and inclement weather, to which dangers people in the country are particularly liable. In choosing a residence in the country it should be borne in mind that this disease occurs most frequently in humid, marshy climates and on the sea coast, and that variableness of climate favors its production. Hence, we should select an even climate, in a dry, elevated and inland locality. Very cold weather should be avoided, because in

a person whose kidneys are diseased the skin takes the place of the pumps in the leaky ship. Anything which interferes with the free action of the skin will impress the kidneys unfavorably. A fact often noticed will demonstrate the truth of this statement. Among the poor it has been observed that want of cleanliness of the skin is a powerful predisposing cause of this disease. I will tell you why. A large amount of water is daily thrown out through the pores of the skin, and in this water there is a certain amount of urea. So you will be prepared to understand when I tell you that there exists a very friendly relation between the skin and the kidneys. When the skin throws out a large amount of perspiration, as in warm weather, there is a correspondingly smaller amount of work for the kidneys to do. On the other hand, in winter, when the pores of the skin are contracted by cold, and less perspiration is given out through them, the kidneys have a larger amount of work to do. Let me give you a marked illustration of this fact. In Case No. 2, quoted in the early part of this book, the disease was discovered in November. The patient was immediately placed under treatment. For some time

he remained about stationary, apparently no worse and no better. On a certain evening, complaining very much of headache, dry cups were applied to his neck, to draw the surplus of blood from his head, and means were employed to promote the action of his skin. The effect was marvelous ; he slept soundly all night (which he had not done for weeks before), and awoke in the morning feeling, as he expressed it, splendidly. He ate a very hearty breakfast and digested it, and said he felt perfectly well. It was a cold December day. Having some business, he ventured out. He had not been in the street half an hour before he became so sick that he was compelled to return home. He grew rapidly worse, had a convulsion in less than forty-eight hours, and was dead in less than a week. Now, you see, the free action of the skin which was brought about removed from his body the poisonous urea and allowed him to feel well, and his stomach to digest a hearty breakfast. As soon as he was exposed to the cold air the action of his skin was checked, his kidneys were too much diseased to remove the urea, hence it accumulated in and fatally poisoned his system. One of the most perfect illustrations of this corre-

lative action of the skin and kidneys that can be imagined has just occurred to me while writing this little book. I was examining an obscure case, supposed to be liver disease, and which I ultimately discovered to be Bright's Disease. In making this examination it was necessary for me to handle the patient a great deal. Upon its completion I was unable to thoroughly wash my hands. Some two hours, or more, afterwards, I accidentally put my hand near my nose, and was immediately struck by the strong, pungent odor of urea, clearly showing the surface of the patient's body to be coated with it. In other cases I have noticed this odor given off from the skin in a person very far advanced with Bright's Disease. Now, please understand me. I do not recommend you to keep yourself constantly in a violent state of perspiration. If you do, you will do yourself a great deal of harm. What you want is to keep up that insensible perspiration, as it is called, which in a healthy person is constantly taking place. Let me tell you that about a pint of water is given out by the skin every twenty-four hours, even when it does not feel moist to the touch. This water is absorbed by the surrounding atmosphere as soon

as it appears on the surface of the skin, so that to ordinary observation its presence is imperceptible, hence it is called *insensible perspiration*. Now, in order to keep the skin in proper action, we must attend to several points. We must particularly avoid draughts and cold weather; we must always be warmly clad. You all know that heat expands and cold contracts; hence you can understand that cold weather, by its contracting influence on the skin, will prevent the free passage of water through its pores. The clothing worn next the skin should be of a porous texture, because it will absorb the water as it is given out. If the clothing does not take up the water, but allows it to accumulate on the skin, it interferes with its removal, and consequently with its elimination by the skin. So, I tell you, wear *woolen* and do *not* wear *cotton* under clothing. Let me point this precept by relating a case which has just occurred in my own experience. While writing this very chapter on the avoidance of cold and the clothing to be worn in this disease, I was called in haste to see a patient who was reported to be very sick. Upon reaching his bedside I was immediately struck with the peculiar pale, earthy appearance of his

face, which is so characteristic of this disease in its advanced stages that it might with propriety be termed the "*Brighty Complexion.*" He had for some time been treated for disease of the liver. I made an examination of his urine and discovered a marked case of Bright's Disease. When I made known the nature of his disease to his family, I was questioned by his father as to the cause. I told him the causes were numerous ; among others, I said, is exposure to cold and an insufficient amount of clothing. "Ah!" said the father, interrupting me, "that is it." Why, on the coldest day in winter I could not get this boy to wear drawers ; he thought he was so strong and well that he could expose himself in the most inclement weather, improperly clad ; and would never think of changing his clothing after getting wet. Working in a mill, he would often, when in a violent perspiration, sit down anywhere, not thinking or caring whether he was in a draught or not." One of the most marked cases of this disease that I have ever seen occurred in a man who was employed on a steamer as a stoker, a class of men among whom this disease is very prevalent. I need not tell any one who has ever been on an

ocean steamer that these *stokers* will spend several hours in the hold of the vessel, stripped to the waist, shoveling coal. They perspire most violently, and when their term of work is over, still stripped, they hurry to the deck to cool off. Any one can foretell what occurs. The perspiration is suddenly checked by the strong wind and cold or cool weather always found at sea ; their expanded pores are contracted, hence, extra work is thrown on their kidneys. At the same time, the blood in the vessels of the skin is driven out of them by the contracting influence of the cold, and forced into the internal organs in undue amount ; and if a latent tendency to inflammation of the kidneys should exist, it is brought into activity by these means.

It is of the greatest importance to bathe frequently, in this disease, because the upper layer of the skin is constantly dying, and its dead scales adhere to the body, and if allowed to remain they will offer a mechanical obstacle to perspiration. Again, the *insensible* perspiration of which I have told you carries with it particles of dead and decayed tissue ; the atmosphere absorbs the water, while the decayed particles are left on the skin. If

allowed to accumulate there they will form a coating, which will interfere with the passage of the water. I would recommend you to take a daily bath, and probably the best time would be just before getting into bed. Because, if you choose the morning you will be apt, sometimes, to go out into the cold air with the pores of your skin wide open, from the bath, and the air suddenly contracting them will throw a strain on the kidneys. *Warm* baths are to be recommended, because they tend to open the pores of the skin and promote its action. A warm bath is also a sedative, and tends to produce sleep, which, by the general rest it gives to all the organs of the body, will be favorable to the weak and exhausted kidneys. Cold baths are to be condemned, because, by contracting the vessels in the skin, they force the blood out of them, and cause it to seek a home in some of the warm interior parts; the kidneys being diseased are, of course, weak, and offer the least resistance to its unwelcome intrusion, and so it lodges in them, congesting them and adding fuel to the flame. If you bathe daily, do not remain in the bath more than ten minutes; if you do you will exhaust and weaken yourself. If you find a full bath too

weakening when indulged in daily, make use of a bath by means of soap, water, and a towel, only exposing a portion of the body at a time, and covering it up as soon as washed, or you may take cold. A sponge bath I can only characterize as a filthy abomination. A sponge will absorb and retain all manner of dirt, and it is next to impossible to keep it clean. To believe this, smell a sponge after it has been some time in use.

Turkish baths, occasionally indulged in (about once a week), will do much toward promoting healthy action of the skin, but let me emphasize one point. In cold weather remain in the cooling-off room and do not expose yourself to the outside air for a good hour, until you are thoroughly cooled. By neglect of this precept the bath will do more harm than good, as the cold acting suddenly on the expanded pores will so thoroughly contract them as to throw more work than ever on the weak kidneys. For the same reason I would omit the cold plunge at the end of the bath and substitute a lukewarm shower bath. Now, do not misunderstand me and imagine that your skin can be made to take the place of your kidneys. Not by any means. A man whose kidneys

are worthless and unable to remove urea cannot live, no matter how healthy may be the action of his skin. There are many people in whom the kidney disease has only advanced to the stage of inflammation, where there is no degeneration of the structure of the kidney. Now, it is an all-important axiom in the treatment of inflammation, wherever it may be located, that the inflamed part should be relieved as much as possible from work, and allowed to rest. So, in these cases, you can understand that if the skin is kept in healthy action it will help the kidneys to do some of their work, and will thus give them a certain amount of rest and enable them to regain strength and tone. Again, even when degeneration of the kidney has set in, it may be only to such an extent that these organs are able to remove a considerable amount of urea, but not all; here the healthy skin action will remove the balance, which the kidneys are unable to do. Thus, by purifying the blood and so furnishing good nourishment to these organs, their degeneration will be retarded. I need hardly say that healthy skin action is very dependent upon frequent change of clothing. If the clothing be very dirty some of its impurities

will adhere to the skin and we have a mechanical impediment to perspiration. Muscular exercise tends greatly to keep up healthy action of the skin, but when heated from this exercise be very careful to avoid the slightest draft, or by suddenly contracting your skin you will do yourself harm. Let me here (at the risk of tediousness from repeating) impress upon the person with Bright's Disease that *the* most important factor in prolonging life and enjoying comfortable health is *healthy skin action*. Because the skin, more than any other organ or part of the body, has the property which enables it to help the kidneys in the performance of their duty. Remembering what I have said, you will understand why I would advise any one living in a region where the winters are severe to leave home upon the first approach of cold weather and spend the winter months in a warm latitude. Let me impress this on your memory by the aid of statistics. In the five years from 1875 to 1880 the deaths from this disease recorded in the city of Philadelphia, during the months of January, February and March, amounted to 429, while in the same years, for the months of June, July and August, I find

only 349. In this country, Florida has for many years ranked high as a winter resort for invalids, and deservedly so. The climate there is delightfully pleasant and the temperature is very even ; the sudden changes from heat to cold and the reverse, so common in our Northern States, and so particularly injurious to a weak kidney, are unknown there. There can also be found in that State sulphur springs for drinking and pools for bathing, which tend greatly to promote healthy action of the skin.

It is obvious, from the facts already given you, that any one having weak or diseased kidneys should exercise the greatest care in reference to their clothing. They should always be warmly clad, and above all things, should immediately change all of their clothing after getting wet from the rain or otherwise, being particular to rub the whole body with a coarse towel, until it glows, before putting on the dry clothing. A simple, and I believe very good, practice for people with weak kidneys is to make use of counter irritation over the region of these organs, morning and evening. This may be easily done by taking hold of the ends of a coarse towel with each hand, and drawing it rapidly

several times across the small of the back, until a sensation of warmth or slight burning is felt ; persons with tender skin should be careful not to use a very coarse towel, or they will abrade the skin and make themselves sore. Let me here explain to you how counter-irritation acts, so that you may understand the *modus operandi*, whenever I may have occasion to recommend it. Bright's Disease in its various forms is essentially an inflammatory affection. Now, the chief and invariable feature of inflammation is an excess of blood in the inflamed part. When we put a mustard plaster (a form of counter-irritation) on the skin over the chest, for a pain in the side, what effect do we produce ? By this counter-irritation we cause the blood to be drawn from the nearest organ or part to the skin where we have the mustard, and by this means we remove the excess of blood from the inflamed part to the skin, where it is harmless, and so relieve the affected organ. So by this friction with the coarse towel over the kidneys, we produce the same effect as with the mustard plaster on the chest ; we draw the excess of blood from the congested and engorged vessels of the kidneys to the surface, and by repeating

this irritation morning and evening, we help to overcome the tendency to engorgement, and assist the free and healthy circulation of the blood through the kidneys. For the same reason, you should be particular to keep your feet warm. Cold feet indicate an insufficient amount of blood in the vessels of the feet. Now the whole body contains just as much blood, ordinarily, when the feet are cold as when they are warm ; where then is the blood that ought to be in the feet ? Being driven out of the vessels there by the action of cold, it has naturally sought the weakest organ, where the least resistance was offered to its entrance, and has accumulated in undue quantity in the kidneys, where it wreaks its revenge upon the man who did not have sense enough to keep his feet warm, and drove the blood whose proper home was in his feet out into the world among strangers who did not want it and whose house was already comfortably full. I once knew an eminent clergyman, a man of great learning and sound common sense, who kept constantly on hand a number of stockings of different degrees of thickness, and who, upon rising in the morning, consulted his thermometer (hanging outside of the

window) as to which pair of stockings he should wear. I remember, at the time, thoughtless people laughed at him for what they termed his "*old-maidish habits*;" by so doing, they only exposed their own ignorance, for this good gentleman, who attained a ripe old age of great mental work and usefulness, clearly showed that he understood and thoroughly appreciated one great secret of health, *keep your feet warm*. It would be well for people with weak or diseased kidneys to wear over the region of these organs a fold of flannel (two or three thicknesses) about six inches wide, during cold and damp weather. Tape sewed to either end and tied in front of the abdomen, will keep it in position. This will help to protect the kidneys from the evil effects of cold. But let me caution you that, having once commenced its use, never go without it while the cold spell lasts, as the very fact of this extra protection would render the part more susceptible to the bad action of the cold, if its use were intermittent.

Alcoholic liquors should be absolutely discarded in this disease. Their use cannot be beneficial, and in the large majority of cases will be absolutely injurious. Gin is popularly supposed to

have an action on the kidneys, and so it has ; it promotes their action and increases the quantity of urine ; but its use is only safe to tide over great emergencies. It is like giving the spur to a tired horse ; he will go faster for a time, but the subsequent exhaustion will be all the greater. Gin, therefore, is a diuretic, a medicine that will increase the action of the kidneys. Remember what I have said about Bright's Disease being of an inflammatory nature, and read what Dr. Black, of Glasgow, says about the use of diuretics : "Diuretics are actually employed at the present day in the treatment of acute and chronic nephritis (Bright's Disease), on what basis in reason or common sense I have ever failed to comprehend. I have always regarded it as an axiom, in the treatment of inflammation, that rest to the inflamed organ is of the first importance. As well, in my opinion, command a man suffering from double pneumonia to leave his bed and take a three-mile race, as to give stimulating diuretics in a case of nephritis." Now, why is rest so important ? I have told you that an excess of blood in the part affected is the chief and invariable feature of inflammation. Any motion or exercise

of a part will cause a destruction of some particles of tissue which have been concerned in the motion, and new particles are deposited by the blood in the place of the old ones. Now, if excessive motion or exercise takes place, you can understand that great destruction of tissue must ensue, and as a natural sequence, an excessive amount of blood must rush into the organ or part, in order that a sufficiency of nourishment may be furnished to properly supply the waste and keep up the balance between formation and destruction, the *sine qua non* of healthy life. So if an excessive amount of blood rushes into any part or organ, we have *the* important element of inflammation; if this influx of too much blood is frequently repeated, the vessels finally become distended and too much blood is all the time in the organ, giving us the condition of *chronic inflammation*. This excessive destruction of tissue is not confined to the voluntary muscles or those under control of your will, as many suppose, but can and does occur in any organ or part of your body. Too much thinking, or seeing, or smelling, or hearing, will cause an excessive destruction of brain tissue. To illustrate this, you are all familiar with the

fact that excessive application of the mind, as in study, will cause headache, which is simply due to the fact that excessive exhaustion of brain tissue has caused an extra amount of blood to flow into the brain to repair this waste. The vessels being dilated and rendered larger by this surplus of blood, exert an unaccustomed pressure on the surrounding sensitive brain tissue, and a headache is the result. So if you use any agent which has the property of stimulating the kidneys to increased or excessive action, you are likely to do harm. As you see, you will direct towards the kidneys an unusual amount of blood in order to repair the destruction which the excess of work has caused, but when the necessity for this extra supply has passed away, the vessels of the kidneys, being weak, are unable to drive the excess of blood out of them, and it remains in a state of chronic inflammation, engorgement or congestion, and we ultimately have degeneration of the kidneys and all the resultant phenomena of Bright's Disease. Alcohol is stimulating to the kidneys ; hence you can clearly understand how terribly dangerous its use would be if your kidneys are weak. In many cases of Bright's Disease there

is so little suffering until towards the last, the patient being able to move about and join in the ordinary movements, pursuits and pleasures of life, as one in vigorous health, that he fails to consider himself an invalid at all, and is very prone to be guided entirely by his inclinations in his mode of life, rather than by his physician's advice. If sociably inclined, he is very apt to daily consume a certain amount of alcohol, imagining that it does him no more harm than it does his vigorous neighbor. Because so many fall into this fatal error, I intend to go into the question of the use of alcohol in this disease somewhat at length, and to show you how very insidious and devil like are the evil effects of alcohol, and how little you can judge of the extent to which these effects have gone, by your feelings. First, let me tell you some of the effects which alcohol produces on the system at large. You all know that it is irritating ; whoever among you has ever swallowed a glass of whiskey, has felt the biting, the burning in the throat and stomach, which it produces. This burning and sensation of warmth is due to the fact of the alcohol irritating the delicate coating of the stomach and causing

more blood to flow into it, just the same as mustard will do if applied to the skin. If frequently repeated, this excess of blood becomes permanent, and a chronic inflammation of the stomach is the result. This condition may be produced in a person who has never been intoxicated in his life, but who has used alcoholic liquors in *moderation* for some time. You will believe me when I tell you that a stomach in a state of chronic inflammation cannot possibly digest food thoroughly, and so half prepared nourishment is furnished to the weak kidneys, when they ought to have the purest and best, just as a weak man requires to be fed upon what is most easily assimilated. Again, it is a well established physiological fact, and one which common sense will make apparent to everybody, that when vessels are filled to their utmost capacity they are incapable of holding any more ; hence these vessels in the walls of the stomach, which, properly acting, should take up some of the products of digestion, are so engorged with blood as to be unable to do so, and as a natural consequence, a portion of that which was intended to repair the wear and tear of our bodies is unable to get inside of us, and much valuable nourish-

ment is thus unwillingly forced out of our stomachs and wasted, sometimes causing diarrhoea by irritating the bowels in its endeavor to find an outlet from the body in that direction.. Let me here warn you, that your feelings are no indication of the amount of damage done to your stomach, as the following interesting case will demonstrate. Some years ago, a man called Alexis St. Martin received an injury to his abdomen, which resulted in a permanent opening from the exterior of his body to his stomach, by means of which all the phenomena occurring in that organ could be observed by an outsider. Now, Dr. Beaumont has put on record, that after St. Martin had freely used ardent spirits for eight or ten days, he could perceive his stomach to be in a very unhealthy condition ; the lining of it being red and spotted with small ulcers ; the gastric fluids were of poor quality and mixed with a thick, ropy, gluey material, while from the little ulcers a foul matter mixed with blood, resembling that which passes from the bowels in dysentery, was given out. And yet he notes that “St Martin complains of no pain, nor shows symptoms of general indisposition ; says he feels well and

has a good appetite." Dr. Beaumont adds "That the free use of ardent spirits, wine, beer, or any intoxicating liquor, when continued for some days, *invariably* produced these morbid changes." How could such a stomach possibly prepare and furnish to the blood suitable nourishment for a weak or diseased kidney? Stop and consider that I have told you that no disease is so much influenced for good or for bad by the condition of the general system as this very one under consideration. A good condition of the general system simply means a thorough performance of duty on the part of each and every organ in the body. Is it possible for the organs to do their work satisfactorily if you do not furnish them with wholesome food? Would a locomotive be able to pull a train of cars if the engineer supplied the furnace with poor coal, full of impurities? Of course not; the steam generated would be very insufficient and we would never hear of the lightning express. Neither can the human being live properly without pure, wholesome nourishment; and once for all, let me tell you that a congested stomach cannot and will not furnish to the blood this pure nutriment, and

your kidneys will suffer along with the rest of your organs, only, being weaker, the result to them will be more disastrous. A very beautiful and interesting phenomena takes place in the lungs, by which foul and unclean blood is purified, and heat is generated to maintain the temperature of the body. Let me tell you about it. The blood in circulating throughout the body not only carries nourishment to the various component parts thereof, but it receives from them the dead and decomposed particles, whose mission has been performed, and carries them to the different organs whose duty it is to remove them from the body. Many of these particles are carried into the lungs in the shape of carbon ; you also receive into your lungs a certain amount of oxygen in the air which you breathe ; now, carbon has a great affinity or liking for oxygen, so when these two substances are brought into contact in the lungs, they rush together and unite, forming carbonic acid (which is a mixture of carbon and oxygen), and as such many of the dead and consequently injurious particles are removed from the body in expiration. The importance of this process will be understood when I tell you that the equivalent

of about eight ounces of solid carbon is thus removed from the body in twenty-four hours. You all know how poisonous are the effects produced by the inhalation of carbonic acid gas, and therefore can readily appreciate how very injurious the retention of such a large amount of carbon in the body would be. The chemical union of carbon and oxygen generates heat, just as the burning of coal in your stove does, the carbon in the coal uniting with the oxygen in the air. This heat serves to keep up to its proper standard the temperature of the body. If its production be interfered with to any great extent, you would soon freeze to death on a cold day. Now, let us see what occurs when alcohol is circulating in the blood. Carried into the lungs, it has a greater affinity, a stronger liking for the oxygen in the inspired air than the carbon in the dead tissue has, hence it rushes forward and eagerly appropriates it to its own use, leaving the decomposed particles to remain in and poison the blood, and through it, the whole system. This great affinity which alcohol has for oxygen will also cause an excessive generation of heat, just as a good draught, by increasing the supply of oxygen to a

stove, will augment the fire and increase the heat given off. This extra heat will render the blood feverish and unfit to properly nourish the kidneys, while the impurities retained in the blood will react on the stomach, through the circulation, and impair digestion and the proper preparation of the food. Many of these decayed elements which have been unable to get out of the body through the lungs, will then be carried by the circulation to the liver, which organ will try to eliminate them, and for a time will succeed in doing so ; but this extra work thrown on the liver, in addition to its own proper functions, - will sooner or later exhaust it, and disease of this organ will result. I will now simply tell you that alcohol has an injurious effect on each and every organ of the body, peculiar to the particular organ, but will not detail them in this little book, passing on to its specific action on the weak or diseased kidney. I have known some physicians to recommend the use of a small drink of whiskey before dinner, in Bright's Disease, with a view to stimulating the appetite and aiding digestion. Let me tell you what this small dose of whiskey will do, and you will clearly understand why its

use will be injurious, and should not be indulged in. It will stimulate the appetite and, at first, will aid digestion; so far the physicians who advocate its use have some reason for their directions. But let us look further. The appetite is the voice of the system, demanding nourishment to repair its waste, and is made known through the agency of the stomach, which organ it uses as its mouth-piece, to make us cognizant of its wants. Of course there is a definite amount of nourishment needed to repair a definite amount of waste, and all food which is taken over and above what is required to renew the tissue used up is unnecessary. The body, not requiring it, must get rid of it in some way. If an excess of fatty food is eaten, it will in many people be stored up in the system in the shape of fat for future use. Let us suppose that you have meat for dinner and take a drink of whiskey before sitting down to table. Your appetite is increased; a certain portion of this appetite is due to the alcohol and is not a *natural* demand of the body for nourishment. Therefore, you will eat to excess if you satisfy this appetite. The stomach, stimulated by the alcohol, will digest more meat than the system

requires, the blood will take it up, and after making its rounds and repairing all the waste, will have a balance remaining, which it must get rid of. Meat is rich in *nitrogen*. I have already told you that one function of the kidneys is to eliminate *nitrogenous* elements; so this excess of *nitrogenized* food is carried to the weak kidneys and a demand made upon them to remove it from the blood. So that you can readily see that the good effects of alcohol, in improving the appetite and promoting digestion, in Bright's Disease, are more than counterbalanced by the excessive amount of work which its use will throw upon the weak kidneys. In conclusion, let me tell you that Dr. Christison, a very eminent physician of Great Britain, has said that from three-fourths to four-fifths of the cases of Bright's Disease with which he had met in Edinburgh were in persons who were habitual drunkards, or who, without deserving this appellation, were in the constant habit of using ardent spirits several times in the course of the day. The cases of this disease to which I have referred as occurring in my experience at the Philadelphia Hospital were generally from the lowest and most

depraved classes of society, among whom drunkenness, or at least the use of alcohol, is the rule. Dr. Black, in his lectures on Bright's Disease, when enumerating the causes of this disease, concludes his list by saying, "and, par excellence, inordinate indulgence in alcoholic liquors." If, then, alcohol is such a prominent cause of Bright's Disease, does it seem inconsistent to say that its use will hasten the degeneration of the kidney, when it has commenced? Therefore, I will enunciate the following rule concerning its use. Never drink alcoholic liquors as a beverage, and only use them as medicine on rare occasions, in small quantities, in great emergencies, and under the advice of a competent physician.

Tobacco.—We now come to alcohol's twin brother. As long as the world lasts I suppose there will always exist a controversy as to the effects of alcohol and tobacco. Those who enjoy and desire to use these two articles will stoutly champion their innocence; while, on the other hand, those opposed to their use will denounce them as pernicious and injurious. Occasionally, a converted smoker or drinker, his habits changed from pure conviction, will realize and believe in

the injurious effects of tobacco and alcohol, and will join his voice and influence with the anti-smokers and the anti-drinkers. But the rule may be laid down, with few exceptions, that once a smoker or drinker always a smoker or drinker. There is one body of men, however, the medical profession, who are united, or nearly so, in proclaiming the deleterious action of these agents. You will scarcely ever find an intelligent physician who will not admit that excessive use of either alcohol or tobacco will be more or less injurious to every one. And by excess, the medical man does not mean what the general public understands by it. A much smaller quantity will constitute excess in his judgment. Three cigars daily would seem to the ordinary individual like exemplary moderation, while to one who has given the subject much thought or study, it would constitute excess. Let me stop generalizing, and tell you bluntly, that a single puff of tobacco smoke means excess to a person whose kidneys are diseased. Now, why? Because tobacco is a foreign agent, an article whose presence is not requisite to the welfare of a single organ or part of the body, and whose use will prove injurious to

the system at large, and particularly to the kidneys. Nicotine is the active principle, the essence, so to speak, of tobacco. Now, it has been clearly demonstrated by physiological research, that nicotine is removed from the body through the agency of the kidneys. Remember what I have said about the necessity of giving rest to the diseased kidneys, and then think that by taking nicotine into your body you are forcing the kidneys to do extra work in removing it. The habit of inhaling tobacco smoke is particularly bad, because by this means a greater amount of nicotine is taken into the blood through the agency of the lungs. Still, however, you can understand how you must inhale a great deal of this poison, when sitting in a room in which one or more persons may be smoking, even though you are not smoking yourself. Hence, to live strictly as you ought to, it would be proper for you to avoid a room in which smoking is going on. To realize the fact that tobacco smoke must be injurious, you have only to recall those instances among your acquaintances where persons unaccustomed to tobacco have been made sick even unto vomiting by its use in their presence, and to remem-

ber that the large majority of smokers have to be initiated into the art of smoking, through a series of headaches and sick stomachs. The law of tolerance, about which I have already told you, is well illustrated here. Any article, no matter how injurious it may be, if commenced in very small quantities, may finally be used in enormous doses with little or no apparent effect. But this tolerance does not prove their innocence. On the contrary, the fact that a course of training is necessary in order that their use may be tolerated, tends to prove that they must in themselves be injurious; for no training is necessary in order that the human being may use *wholesome* articles; it is natural for him to do so. Again, a portion of nicotine will be carried into the stomach in the saliva or spittle which you swallow, and from there absorbed into the blood. If you expectorate all your saliva, to escape this evil, you incur an equally great one in imperfect digestion and preparation of your food, because the presence of saliva is necessary to the proper digestion of some of the articles of food. Again, the excessive use of tobacco will upset the stomach, and interfere with the thorough digestion and preparation

of your food; so you can see that poor blood will then furnish poor nourishment to your kidneys. Let me then sum up by telling you that if you want to live *strictly* as you ought to in this disease, you will throw away all of your tobacco. If you consider this too much of a deprivation and are unwilling to do it, reduce the quantity consumed as much as possible; one cigar daily, in the evening, after a hearty meal, will work you the minimum of harm and will really constitute moderation. Remember that any use of tobacco is particularly injurious to the diseased kidney, and that the amount of injury done will be directly in proportion to the amount of tobacco consumed.

Your diet is of great importance in this disease. In the first place, because so much depends on the condition of the general system, which cannot be in good order unless a sufficient amount of nourishing food is taken into your stomach. In the second place, because certain articles of food seem to have a special determination to the kidneys. This last indication only applies to cases in which an excess of food has been taken, more than the system requires, when it becomes neces-

sary for the various eliminatory organs to remove this excess. As I have already told you, one function of the kidney is to remove from the body the nitrogenous elements. Beef is very rich in nitrogen; hence you should be careful not to eat too much beef, or you will throw an excess of work on your kidneys. At the same time, beef is very nourishing, and forms muscle; hence an insufficient quantity of it would interfere with the proper and necessary production of vigor and strength. So, with beef, as with all other articles of food, you must endeavor to select the proper medium. This you can only do by experience. The amount of the various kinds of food required in twenty-four hours to support life and strength in the average man in good health and vigor has been determined upon, but in a practical work like this would be of no use, because every man must really be a law unto himself in this matter of eating. The amount required is influenced by many circumstances. One who is employed at hard work or takes much exercise obviously requires more nourishment than one who idles through life. Let every one observe the following rule. Chew all of your food thoroughly, swallow

it slowly, and cease eating before you experience a sense of fullness and discomfort in the stomach. When the chemist or druggist wishes to make a chemical solution, you all know that it is necessary for him to first put his solids in a mortar and thoroughly and finely pulverize them with a pestle before he adds his liquid which is to make the solution ; if he did not, the fluid would only be able to act on and dissolve the outer layer of the solid, while the inner portions would remain intact. Digestion is also a chemical solution of your food through the agency of the liquid gastric juice. Your mouth is the mortar and your teeth the pestle. If you do not thoroughly grind and pulverize your food with your teeth, you can understand how impossible it is for the gastric juice to reach all parts of it. If you eat until you feel full and drowsy and have a sense of weight in your stomach, you can rest assured that you have eaten too much. If your stomach be strong and vigorous, it will digest all you have taken, and your poor kidneys will have to work off a portion of the excess. Frequently repeated, this over repletion will eventually exhaust and ruin the stomach, and the suffering and manifold evil

effects of dyspepsia will result. Use the judgment with which the Almighty Creator has endowed you, and, by carefully noting the effects which the various articles of food have upon your stomachs and your feelings, you will soon be able to make up a suitable bill of fare. The old saying, that "at thirty years of age every man is either his own physician or a fool," is eminently true in regard to his diet. No *absolute* rules can be laid down for your guidance, but experience must regulate the quantity and quality of diet for each individual. Let me sum up by giving you an excellent example to follow, which I quote from the valuable letter of the Hon. Eli K. Price, already referred to. He says "I have always been careful of my diet, but not dainty or fastidious. I have eaten to live with a comfortable stomach and a clear intellect, and have constantly watched these indexes. I am as watchful as to my food as is the smelter of iron that his furnace shall not chill or choke, and regulate my food to prevent constipation or laxity, rather than to resort to medicine, which I avoid using until necessary." The plainer your food the more wholesome will it be. In warm weather you will require less meat

and less oily food than in cold weather. So, in a word, regulate your diet according to the results of your experience, and remember that you are more apt to suffer from *over* than from *under* eating, and exercise the greatest care not to gorge yourself. I will for an instant refer to and recommend the free use of milk, because it is very nourishing and exceedingly easy of digestion. In some persons, however, its use will cause biliary-ness and constipation, and here it must be proscribed. If it does not produce these or other bad effects, its very free use will prove beneficial. When the kidneys have become very much degener-ated and a large amount of urea has accumulated in the blood, we often find a great diarrhoea or purging set up, and we discover urea to exist in the matter ejected. Now this shows an ability on the part of the bowels to help and assist the weak kidneys in the performance of their duty. So, when the kidneys are only slightly diseased and only a small amount of urea is left in the system, the bowels will endeavor to remove it and help their fellow organs. Now you can understand the importance of regular and full evacuations from the bowels. Again, if you make a fire in your

stove, the coal will soon burn to ashes, and if you do not remove the ashes when you add fresh coal, your fire will go out. The dead coal, in the shape of ashes, will choke and finally extinguish the flame. The contents of the bowels are the human ashes, the result of the death and decay of tissue, and are not only no longer of any use to the body, but their presence will be absolutely injurious. You must get rid of them. To any of my readers who may be of the constipated habit, I will say that to enjoy good health you *must* have a *daily* evacuation from the bowels. Select the most convenient hour in the day, and always go to the water-closet precisely at the same time. Regularity is a very important factor in coaxing the torpid and languid bowels to regular action. Combined with this regularity of habit I have, in numerous instances, found a glass of *cold* water, drank after sitting down to breakfast and *immediately* before eating, very efficacious. Some people with delicate and sensitive stomachs will complain that this water will make them sick. If they persevere in its use for a few days, and take it *immediately on the instant* before commencing to eat, it will not make them sick. Assistance

may also be rendered to the bowels by eating fruit before breakfast, by using oatmeal, bran bread, etc. If these simple household means fail to overcome the constipation, you should at once consult some good physician. As you value your health, do not use opening medicines on your own responsibility. I venture to say that there is not a solitary physician in active practice who has not, or has not had, some patients, principally women of middle age, who, to use a vulgar but expressive phrase, are *all broken up*. A *natural* evacuation is as impossible to them as it would be to place the Sphynx of Egypt upon the dome of St. Peters, and all because they have for years been in the habit of using medicine to secure a passage. The bowels have become so accustomed to this medicinal stimulus that they positively refuse to act without it, and such cases are among the most intractable that the physician is called upon to treat, in some cases defying the most skillful management. Now, I want you all to realize the necessity of full daily evacuations, as well as the importance of securing them by natural means and without the resort to drugs.

I will conclude this little treatise by telling you

of the great importance of a proper amount of sleep. The muscles under control of your will, or voluntary muscles, do not require rest any more than the involuntary muscles and organs do, but their excessive use being followed by a sense of fatigue, you are induced to give them rest. Every single one of the myriad phenomena which constitute life entails the destruction of some particles of tissue which have been concerned in its performance. The acts of thinking, of seeing, of hearing, of smelling, of tasting, in fact, every action of the economy, will cause the death and decay of some particles which must be removed from the body. You will then understand that the kidneys are in a state of activity, are constantly working when we are awake and *actively living*, so to speak. On the other hand, when we are asleep many of our senses are for the time being dormant; our whole life is lessened in intensity; we live slower, as it were. Hence there must, of course, be less destruction of tissue, in consequence of which the kidneys, as well as all the other eliminatory organs of the body, are enabled to secure repose and rest, during which time they can repair the waste in themselves and re-

cuperate their strength for future work. I would say, as a rule, that every one should secure at least eight hours of *sleep* out of the twenty-four.

Put the contents of my little book into your mental stomach and thoroughly digest them. The result will be that you will understand that all I have told you really means that you should live *reasonably* and *moderately*. Herein lies the whole secret of longevity, whether you be sick or well. If I have succeeded in making clear to non-professional minds the essential nature of Bright's Disease, and the fact that one afflicted with it may live and enjoy himself for many years if he will only use common sense, prudence and experience, and if I have made him understand how to use these valuable agents, I shall have fully accomplished my desire. Hoping that I may have accomplished this purpose, even to a limited extent, I cut this little volume loose from its moorings, and trust that it may carry tidings of comfort and cheer, and prove of benefit to my friends with "Bright's Disease."

MALARIA:

WHAT IT MEANS AND HOW AVOIDED.

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PREFACE.

Of all preventable diseases, of all human suffering that can be avoided by a little general knowledge, the myriads of symptoms ascribed to malaria stand pre-eminently high. Of all affections about which public misapprehension is very great, malaria is entitled to the highest rank. Of all unsatisfactory terms, this title of malaria is by far the most unsatisfactory. Whenever a person feels *out of sorts*, biliousness or malaria receives the blame. This term is made the shield by many incompetent physicians, to hide their want of penetration in diagnosis, and is accepted by the patient as the true cause of all his suffering. This general belief in the great prevalance of malaria and the public notion that quinine is a specific for the disease in all its forms, has caused the unintelligent use of enormous quantities of quinine by an unadvised and uninstructed public, much to the

general detriment of the human race. In malaria, probably more than in any other disordered state of the system, *an ounce of prevention is worth a pound of cure.* Therefore it seems to me, that mankind can be improved in general health and benefited physically, by a better understanding of the true nature of malaria and the best means of avoiding it.

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*Saint George Hotel,
Broad and Walnut Sts., Philadelphia,
September, 1881.*

WHAT IS MALARIA?

I have undertaken a herculean task, when I attempt to answer this question. So diverse are the views entertained on this subject, and so comparatively meagre the accurate knowledge which we possess, that it will be a very difficult matter to give an explanation of the nature of malaria that will be universally satisfactory; so that, while I feel sure that the views expressed in this chapter will receive some rough handling and severe criticism, yet I am equally certain that what I will tell you will be the means of enabling you to avoid very much of the suffering which is directly or indirectly traceable to malaria. There was a time when the name malaria was applied to a certain specific poison, which possessed the power of producing Intermittent Fever, Chills and Fever, Ague. Thus Professor Flint, of New York, in the third edition of his *Practice of Medicine*, published in 1868, says, “The causation” (of Intermittent Fever) “involves a special morbific agent, commonly known as *malaria*.” In 1717, Lancisci, an Italian writer, called this special poison

marsh miasm, and described its origin as due to vegetable decomposition. In Dunglison's Medical Dictionary, published in 1868, malaria is defined as follows: "The word *miasm* (malaria) has by some been employed synonymously with contagion. It is now used more definitely for any emanation, either from the bodies of the sick, or from animal and vegetable substances, or from the earth, especially in marshy districts, which may exert a morbid influence on those exposed to its action. To these terrestrial emanations the Italians give the name *aria cattiva*, but more commonly, *malaria* (bad air). Of the miasm which arises either from the animal body or from the most unhealthy situations, we know, chemically, nothing. All that we do know is, that under such circumstances emanations take place, capable of causing disease in many of those who are exposed to their action."

A very indefinite definition, but as accurate as any that have hitherto been offered in our present limited knowledge of the exact nature of these poisonous emanations. In his "*Practical Hygiene*," Dr. Parkes, the late eminent English sanitarian, says, "The most important organic impurity of the atmosphere is malaria." Dr. F. T. Roberts, in his *Practice of Medicine*, says, "Certain other diseases are attributed to it (malaria), such as dysentery, diarrhoea, gastric disturbance, etc., and also

a general state of ill health and low cachexia, with ultimate degeneration of the race." He also tells us that "The essential conditions for the production of the malarial poison are, vegetable decomposition, a certain temperature, with a certain degree of moisture." You can now understand how much uncertainty exists concerning the true nature of malaria. Until we accumulate exact information on any subject, theorizing is not only permissible, but, by giving us a platform upon which to conduct our experimental researches, becomes a very important factor in the accumulation of this knowledge, provided always, that we do not rest content with the mere theory, but accept it as a fact only when it has been indubitably proven to be such by the crucial test of the severest scrutiny, the most intimate research and the weight of overwhelming experience. Therefore, premising that what I am about to say is only theory, and warning you against regarding my theories as facts, until they have been amply proven to be such, I will conduct you through a process of reasoning, by which I hope to make it seem at least probable that the origin and true nature of malarial poison, as we now call it, has been shrouded in unnecessary mystery, thus preventing us from comprehending its true nature, and at the same time, that the term malaria is improperly applied. Even if I do not succeed in theoretically estab-

lishing my position, at any rate, there can be no question but that the information I will give you, if properly utilized, will be productive of very much physical good. These few words of explanation I have deemed necessary, because, as this book is more especially intended for the non-professional public it becomes imperative that I should exercise the greatest care not to mislead them, nor to give them erroneous ideas, nor to cause them to accept as settled fact that which is in doubt. Therefore, I again say, the reasoning I will now furnish is my own, the ideas I will give are my own; whatever is to blame in them or to commend, I alone, and not my profession, am responsible for. The profession recognizes the uncertainty of our knowledge concerning the malarial poison, and speaks of it in doubtful and uncertain terms; I also recognize this uncertainty, but I am at the same time endeavoring to erect a theoretical framework, to be filled in with the accumulations of research and experience, until either a clear case is made out for my theory, order springs from the present chaotic notions of malaria, and from uncertainty we possess a certain and accurate knowledge of the nature and origin of malarial poison, or, on the other hand, my theory dies for want of experimental support, and sinks out of sight unsupported by the research and experience of observers. Medical readers will now understand

my position and non-professional persons will be prevented from falling into the error of accepting a theory as an admitted fact, by the explanation I have made. Now to our reasoning. In the first place, let us examine whether the term *malaria* is properly applied. In my opinion it has not been, and is not. Its application is too liberal and hence has been misleading. In a more restricted sense, it is an eminently appropriate and expressive term, and its nature can be much more readily comprehended. The word *malaria* has been derived from the two words *mal aria*, *bad air*, and considering its derivation, its present broad application is entirely too broad, and is calculated to leave its exact nature forever in doubt, since it necessitates the impossible achievement of tracing too many effects to the same cause. The word *miasm* has a different origin, being derived from the Greek, *μιασμα*, a stain from *μιαω*, *I contaminate*. Now, although Dunglison in his medical dictionary refers the definition of the word *malaria* to *miasm* or *miasma*, and so confounds the two and makes them identical in their meaning, yet it will be seen, from their derivation, by the meaning of the parent words from which they have been formed, that they are distinct. While *malaria* really means *bad air*, and is a comprehensive term for atmospheric impurities of various kinds ; *miasma* conveys the idea of an *effect* and not a *cause* ; it is a *stain*, a *contami-*

nation of some portion of the human body, which contamination must be the result of some causative action. Hence the terms malaria and miasma, which are generally used synonymously, are not only not the same in meaning, but the only relation that they can possibly hold to each other is that of cause and effect, the malaria or *bad air* being the cause and the miasma or *contamination* the effect of this cause. Here, then, we see one important error in the application of the word *malaria*. Again, nearly all medical writers tell us, as Professor Flint has done, that the causation of intermittent fever, chills and fever, ague, etc., involves a special morbid agent, commonly known as *malaria*. Had they said a special morbid agent commonly believed to *constitute one of the elements of malaria*, they would have been at least more accurate. Since malaria really means *bad air*, this causative influence of malaria on Chills and Fever is evidently exaggerated and misinterpreted, since bad air will not in every instance give rise to intermittent fever, simply because the air is bad; in order to produce the characteristic symptoms of this disease, the malarial poison or bad air must contain some particular deleterious agent, capable of producing these characteristic symptoms, and without the presence of which they are not developed, no matter how bad and impure the air may be. There-

fore it would seem that the application of the term malaria had become entirely too comprehensive, since the poisoned condition of the atmosphere which is generally indicated when we say *bad air*, cannot of itself alone produce the phenomena of Intermittent Fever, which depend for their existence on the presence of a special poisonous element in this bad air. To illustrate this point, that the presence of the special poison of Intermittent Fever is necessary in the atmosphere, in order that this disease may be developed, I will quote from the July bulletin of the Secretary of the Connecticut State Board of Health, which says, "Malarial diseases appear to have taken a step eastward and northward, as a death from malarial fever is reported from Norwich. I have not yet learned of any east of the Thames river. In many places they are reported as increasing, as in Bloomfield, New Canaan, Unionville, and other towns in various parts of the State, while others report decrease, as in Clinton and Guilford. Collinsville claims entire exemption from malaria in every form, unless imported, as thus far no cases have originated there. *If flowing large areas and alternately covering and exposing the bed of the pond produced malaria, we should have it here. If vegetable decay alone produces it, we should have a fearful epidemic at this Poquonnoc Bridge, instead of Scarlet Fever, as the*

river was absolutely choked with vegetable substances, decaying, and alternately covered and exposed. Yet no case of malaria has ever originated in this town." In this communication the Secretary of the State Board of Health does not mean what I do, and am endeavoring to make you, understand by the term *malaria*. He clearly refers to some one of the forms of Intermittent Fever, as nearly all writers now do. You will observe that he shows many causes for air impurity, for *malaria* or *bad air*, yet he says that no cases of *malaria*, of *his malaria*, have originated there. Yet my *malaria*, *bad air*, surely would be found there; but the special poison capable of producing Intermittent Fever was wanting. So that it is entirely too liberal to ascribe the production of Chills and Fever to *Malaria* in its true sense. Smallpox is caused either by the inhalation from the surrounding atmosphere of a particular poison capable of producing this disease, or by the reception of this poison from the closer contact of a person already afflicted with the disease. In either case the air acts as the medium of communication. Typhoid Fever is caused, in many cases, by sewer gas; this impurity contaminates the air we breathe, and so entering the body gives rise to this particular disease. Cholera is likewise propagated. The same is true of all the infectious diseases. Now the air which is capable of

giving rise to Smallpox, Typhoid Fever, Cholera, and the like, surely must be *malaria*; it must of necessity be bad and impure air, since it contains noxious elements capable of producing a diseased condition of the human body, which elements do not exist in pure air. Therefore, since malaria really means nothing more than bad or impure air, is it not misleading and confusing to speak of malaria as the cause of intermittent fever, as the active agent in the production of chills and fever? Does it not seem more correct to hold the view that malaria means simply impure air, rendered unwholesome by the presence of a great variety of impure elements, which elements are capable of producing various disordered and unhealthy conditions of the system? In one instance the impurity may be of such a nature as to give rise to the phenomena of chills and fever, in another to cholera, in a third to smallpox, in a fourth to diphtheria, and so on; but that in each case it is absolutely necessary that the *special* impurity should be present to give rise to the special disease, which cannot be produced merely by the inhalation of foul air in which this *particular* special impurity does not exist. It would, therefore, be more proper to speak of the poison of Smallpox, of Typhoid Fever, of Dysentery, of Chills and Fever, as elements of malaria or of impure air, if we desire to bring malaria into a causative relation

with these diseases at all. This is not, however, my intention. It will be better and will cause less misunderstanding and confusion, if we speak of *the poison of Smallpox, of Dysentery, Chills and Fever*, and so on, and leave *malaria* entirely out of consideration. Let us endeavor to form an accurate view of this very popular word, and to have a definite idea of its meaning. The use which has been and is made of this word is truly ridiculous. The very fact that it has been utilized to designate so many diverse conditions, plainly indicates the indefinite and uncertain views of its true nature and properties which have been and are entertained alike by the Medical Profession and the general public. Superficial physicians, when baffled by the intricacies of an obscure chronic case of disease, fearing to confess their inability to penetrate the difficulties of the case, and make a correct diagnosis, lest their honest confession may cost them their patient, fall back upon this mysterious *malaria*, and their patients having a very vague and visionary notion of the nature of this wonderful affection, accept the diagnosis, and another case of malaria is added to the already immensely long list of cases of this hydra-headed disease. The medical profession are commencing to realize the absurd and ridiculous position which this undefined word occupies, and our medical journals now contain many

articles on the subject, some ridiculing the prevalent ideas concerning it, while others are seriously endeavoring to find a proper place and meaning for it. Some of the most wonderful and apparently most mysterious tricks performed by the great magicians, are, when explained, exceeding simple and easy of performance. It is their very simplicity that saves them from detection. Apparently wonderful, it seems to the uninitiated that they must be very difficult of comprehension, and a laborious process of thought and reasoning fails to elucidate them, while, when understood, one is ashamed of his former obtuseness, and wonders how he could have been so stupid as not to penetrate such an obvious and childish trick. So it is with many more serious questions. Man seems determined to mystify himself. Instead of endeavoring (where possible) to explain the phenomena of nature as easily as possible, he seems to think it necessary to surround his investigations with all the difficulties and obstructions that he can possibly invent. Imagining that everything which he does not already know concerning nature's workings and scientific truths must be very obscure, and can be elucidated only by the most profound and circuitous reasoning, he fails to try first to explain them by simple, practical common sense, but straightway rushes into scientific theorizing of the most sublime character, and

interprets every ordinary occurrence of nature, not through the eye of *common sense*, but views it with the high power microscope of science. As a result, many things are shrouded with mystery and but imperfectly comprehended simply because a tremendous effort is made to understand them, instead of explaining them in a simple, practical, common sense, matter-of-fact way. This point is particularly true of the question under consideration. There is nothing wonderful or mysterious about *malaria*. No deep reasoning or intimate scientific research is necessary to comprehend its nature. If properly viewed, its nature is as clear as the clearest spring water. What, then, is the nature, what are the properties of this much-abused word? Simply what the word means. I have already told you that *malaria* is derived from two words, *mal*, *bad*, and *aria*, *air*; put them together and you have a perfect definition of this hitherto mystic word, *malaria*, which does mean, and can mean, nothing more nor less than bad air. Let us do away with all the uncertainty surrounding this word, and comprehend it properly. Do not let us any longer say that Chills and Fever are produced by *malaria* (*bad air*), that Typhoid Fever is due to *malaria* (*bad air*), or that Smallpox owes its production to *malaria* (*bad air*). Some critics will say, "who ever claimed that *malaria* did cause Typhoid Fever or Smallpox?"

All of you who claim that malaria causes Chills and Fever (and nearly every physician is wont to ascribe this disease to the cause under consideration) must, if you be honest, admit that malaria has just as much influence in producing Typhoid Fever and Smallpox, as it has in causing Chills and Fevers, because *bad or impure* air is the causative agent in each case. *But* in each case the *malaria* or *bad air* must contain some particular impure or bad element which is capable of producing the particular disease under consideration. Therefore, the idea which at present prevails of *malaria* is very erroneous and misleading. For instance, if we speak of *Typhoid Malaria*, of *Smallpox Malaria*, of *Diphtheritic Malaria*, and so on, we are correct, because we here convey the idea of an impure air or atmosphere, the principal impurity in which is capable of producing Typhoid Fever, Smallpox or Diphtheria, and so we denominate the special poisonous ingredient as well as the whole of which it forms a part, and in which it constitutes the most active ingredient. To illustrate: the family of SMITH is an exceedingly extensive one. Scarcely any, in fact, I imagine none, of my readers are denied the acquaintanceship of very many of the name. The word *Smith* is no less nor more familiar than the word *malaria*. If a friend desires to tell you something about a certain man,

and after describing his characteristics, informs you that his name is Smith, he leaves you with a very vague and illy defined notion of whom he has been talking about. You have a very indefinite idea of the individuality of the person referred to, and should you afterwards meet the man whose characteristics had been described to you, and be told that his name was Smith, you would still, in many cases fail to recognize the man about whom you had been told. But should your informant, after describing the characteristics and personal appearance of the man, finish by telling you that his name was *Abraham* Smith, you would then have a very definite idea of the whole nature of a certain individual, who would be represented to your mind by the words *Abraham Smith*, and upon hearing these words you would at once feel intimate with and perfectly capable of describing the elementary characteristic points and personal peculiarities, the grand combination of all of which would be represented to your mind by the two words constituting the name of the individual possessing these characteristics. So it is with Malaria. There is no doubt that many diseases are developed through the agency of impure air, but when we come to *special* diseases, characterized by *special* symptoms, we must look for a *special* cause, and finding it, give it a *special* name. The disease popularly known as “*Chills-and-*

Fever," when properly developed, possesses for its chief peculiarity periods of intermission in the manifestation of its symptoms, hence the name of Intermittent Fever, a most appropriate one; if we desire to give a name to the causative agent of Intermittent Fever, and if we designate this cause as *malaria*, we open the door to untold misunderstandings and confusions. One person is exposed to the evil influences of *malaria*, or *bad air*, and is seized with Intermittent Fever, while his neighbor, also exposed to bad air or *malaria*, suffers from Typhoid Fever, and a third from Smallpox. It is just as correct to assign the production of Typhoid Fever to *malaria* as it is to claim it as the cause of Intermittent Fever, since in each instance bad air has caused the disease. But in order that our nomenclature may be intelligible and non-confusing, it becomes necessary, when using the comprehensive term *malaria*, to qualify it with a prefix, as we have seen was necessary in the case of the comprehensive name of Smith, and to speak of Intermittent *malaria*, Typhoid *malaria*, and so on. Thus, then, the proper definition of *Typhoid Malaria*, is or should be as follows, "*Bad or impure air; the impure element, or if there be many, the chief and most potent impure element of which is capable of giving rise to Typhoid Fever.*" We have been discussing what *malaria is not*, let us now see what it is. In

order that the functions of the human body may be properly carried on, it is absolutely necessary that pure air should be supplied to the body. Typically pure air is composed as follows: seventy-nine per cent. nitrogen gas, twenty-one per cent. oxygen gas, some watery vapor, and ammonia. This is the composition of ideal atmospheric air. Such air is the best adapted for the maintenance of healthy life; but such air, with exactly such a composition, is rarely found. In some localities, and on some occasions particles of dust, of ashes, of coal and the like, will be found in the atmosphere. The air of a city like Pittsburgh will contain many other impurities resulting from the burning of coal. The air in certain buildings used for manufacturing purposes will contain certain foreign elements derived from the manufacture carried on therein. Thus, in steel factories the air will be found to contain small, almost microscopic particles of steel. In chemical laboratories the atmosphere will contain certain foreign gases or vapors liberated during the manufacture of certain drugs. In bone-boiling establishments the air will be rendered very impure by the decomposition of the fragments of animal tissue adhering to the bones, as well as the animal portions of the bones themselves. In a large city it is almost an impossibility to discover an atmosphere which approaches at all near to the ideal

one given above. So numerous and so various are the sources of impurity, that even the healthiest portion of the city must have its air vitiated more or less. Where, then, can *typically* pure air be found *for our use*? *Nowhere*. A most astonishing, but a true statement. Such air as we have described as typically pure does exist, but we cannot now and never can find it *for our use*. It exists in virgin plains, forests, and mountains uninhabited by animal life. It may be found in mid-ocean. But let man approach to hunt for this beautiful atmosphere, and like the frightened fawn it eludes his grasp and rushes with the velocity of the deer from his presence. This is literally true. Man contaminates that which he uses. Let conceited and foolishly egotistical people remember this in the midst of their self adulation. That they are absolutely so rotten that they instantly render foul the purest air if it merely enters their worthless bodies. This is true, and I will prove it to you. Suppose you are in the presence of such an ideal atmosphere as I have described to you ; you inspire and receive into your lungs a certain amount of this air ; in the next instant you expire and give forth a bulk equal to that which you received. But how changed. Instead of the pure and vivifying oxygen gas which formed the vital principle of the air which you inspired but a few seconds before, the air

given out is laden with carbon, a most impure and 'poisonous element, and this impurity has been derived from your rotting body. You can now understand what I mean when I make the statement that perfectly pure air can be nowhere found *for our use*, since the very instant we commence to use it, we render it foul by the admixture with it of the impurities from our bodies. By a wise provision of nature, however, this carbon impurity, as well as all other impurities, is soon removed from the air, which is rendered once more fit for use. While, as I say, we can nowhere find *typically* pure air *for our use*, yet air sufficiently pure to maintain healthy life *can* be found everywhere; and it is a deviation from, a deterioration of, this ordinarily pure air which I propose to call *Malaria*. Now, then, in conclusion, I will define *Malaria* for you, and will furnish the definition in two words, BAD AIR.

Finally, let me say that throughout this little book, when talking about *Malaria*, I am not talking about Intermittent Fever. I have already given my reasons for saying that it is an erroneous and misleading view to hold that *Malaria* is the cause of Chills and Fever. There is no specific relation between them. This book has nothing to do with Chills and Fever. I believe, as all of my professional brethren do, that the active causative agent of intermittent fever is still

a mystery, but, differing with some, and with the sanction of others, I say that it is erroneous to apply the comprehensive term *malaria* to this special, mysterious, unrecognized agent. Again, I have nothing to do here with Intermittent Fever nor its cause; I do not discuss either. I am enunciating and explaining what I believe to be the proper condition expressed by the word *malaria*, and helping you to avoid the many evils which will result from this condition.

CHAPTER II.

WHERE IS MALARIA FOUND?

Malaria CAN be found *everywhere* and SHOULD be found *nowhere*. Malaria is entirely and completely under human control. Give me the healthiest locality in the world, and I will develop there malaria in twenty-four hours. Give me the most malarious district of the globe, and in time I will remove from it every trace of malaria. In this bold statement I include malaria according to my definition of it. Let us imagine a house in the country, situated on an eminence, from which the ground slopes in every direction. Suppose the water supply to be perfect and plenty, while the drainage is beyond reproach. Imagine the surrounding atmosphere to be of that typical degree of purity described in the last chapter ; allow that all the rooms are sufficiently large and the ceilings high enough to admit of perfect ventilation and to insure to each occupant of the house a liberal supply of air. Would you not think such a house impregnable to disease ; would you not imagine such a locality the greatest foe to malaria ; would you not consider bad air an impossibility ! If you did, you would be right.

Such a location *ought* to be entirely free from *malaria*; but see how soon and how easy bad air can be produced in this temple of health. Suppose this house faces north and south; suppose the kitchen is at the southern end; outside of the kitchen door you have constructed a wooden trough with a lid, in which you place your slop pail. After dinner the cook empties the remnants from your table into this pail, and with the proverbial carelessness of servants, neglects to shut down the lid. The hot July sun beats down on this mass of organic matter, decomposition takes place, and foul gases are liberated; if the wind is blowing from the south, these poisonous gases are carried in the back kitchen door, are blown through the house, they mingle with the atmosphere there, and the air of your supposed healthy house becomes *malarious*, it is *bad*. Again, your privy may be situated some distance, sufficiently far, from your house. It may be on sloping ground and may be well drained. The solid evacuations deposited therein remain there and decompose, liberating poisonous gases which ascend and mingle with the atmosphere. If you know anything about hygiene, you instruct your hired man to throw dry earth into your privy well two or three times a week, according to the frequency with which it is used, which will have the effect of disinfecting the privy and destroying these poi-

onous gases. In the majority of cases he neglects to do this, and these impurities are allowed to mingle with and contaminate the atmosphere and to produce *malaria*. You have water closets in your house, the drainage from which is perfect, the water supply to them is also good; you never suspect that they can possibly be a cause of evil, and therefore never use any disinfectants. Some particles of solid matter may cling to a joint or bend in the pipe, and decomposing, produce *malaria* in the room in which your water closet is, from which it is wafted all over the house. Your drain pipe terminates in a well, a long distance from your house; you are busy, and neglect to examine this well; it gradually fills, until finally its contents reach up to the opening of the drain pipe. Foul gases ascend this pipe and pass along unobstructed until they reach the trap under the water closet; here they are halted for a time by the water in the trap, but, by degrees, and particularly if the closet is not often used, the water becomes saturated with them and soon commences to liberate them from its upper part, and the air of the room and the house becomes malarious. How common is it for cooks to throw the water in which they have been washing dishes out on the ground. This water contains particles of organic matter; the water soaks into the ground and leaves the organic matter on the

surface, where it decomposes and poisons the atmosphere. Many persons use the bed chamber before retiring at night, and allow it to stand in their bed rooms uncovered all night. Its contents decompose and render malarious the air of your sleeping room. Manure heaps are frequently allowed to accumulate very near the house ; they consist of organic matter, which, decomposing, makes the atmosphere *bad*. It is a very common and very erroneous notion that all residents of the country must, because they live in the country, be very healthy. I am practicing among country people, and I know whereof I speak. From the many illustrations I have given, you can readily understand how easily atmosphere naturally pure may become contaminated and unfit to support healthy life. Such, unfortunately, is the case among the majority of country people. They know nothing about hygiene, and consequently fall into the very errors I have pointed out to you, all of which really depend on the imperfect and incomplete removal from their vicinity of decomposing organic matter. In cities these matters are regulated and attended to by competent persons, hence, strange as it may appear, the residents of the better portions of our large cities suffer less from the effects of malaria or bad air than country people do. While in the country we find a lesser proportion of serious and *special* diseases than in the

city, yet we find a much larger proportion of persons suffering from depraved health, and depressed functional activity, as a result of the use of impure air. Now, malaria, or bad air, is always produced by the decomposition of organic material, hence, to put the matter in a nut-shell, *malaria* will always be found wherever we find dead organic matter, and since dead and decomposing organic matter must, as a necessity of life, be found everywhere, so, therefore, malaria must be found everywhere. True, as an abstract principle, but a statement admitting of qualification and explanation. The gases resulting from organic decomposition, must, of course, exist everywhere; this is true. Their presence must contaminate the air; true enough. But, as I have already told you, the air will admit of a certain amount of impurity, without becoming unfit to sustain healthy life. It is only when these impurities become concentrated and intensified to an injurious extent, that they have the power to make air *malarious* or bad. This is well illustrated in the contamination of air from respiration. I have already told you that at every expiration, you give out from your lungs into the surrounding air a certain amount of carbon, which is poisonous; in the course of twenty-four hours the amount of this poison given off from an average healthy man, if all collected, would amount to about eight ounces

of solid carbon. Given off gradually, as it is, it mixes with the surrounding air and becomes so diluted, and finally so altered in composition, by the vegetable life about us, that it becomes perfectly harmless. On the other hand, shut yourself up in a room ten feet square and ten feet high, hermetically seal all openings, and varnish with some impervious wash the walls, in order that there may be neither ingress nor egress of air. This room will contain one thousand cubic feet of air. At the end of one hour all of the oxygen in this room will have been used, and in its place will be found carbon. At the end of a second hour you will in all probability be dead, from charcoal or carbon poisoning. Had this same little room been ventilated, you might have lived in it with impunity, without ever leaving it, for fifty years. Hence you see the danger of impurity in the air is not so much from the mere presence of the impurity as it is from the concentration and accumulation of it, which can only result in the impure gases displacing and substituting the pure elements of natural air. I could hold my head over a privy well and suffer no ill effects from the poisonous gases arising therefrom, if a fan were revolving near me, constantly forcing a copious stream of pure air across my face, thus diluting the privy impurities to such an extent as to render them harmless. This point is remarkably well

illustrated in the city of Chicago. The Chicago river runs through the centre of the city. Of all foul streams that ever were found this is surely the foulest. So intensely foul are the odors arising from it, that any one who has not lost all sense of smell must necessarily hold his nose when crossing it. And yet, strange as it may seem, vital statistics prove Chicago to be one of the healthiest cities in the United States. Every once in a while a strong wind coming in from the lake will blow these foul gases away from the city and carry them off to the boundless prairies of the west, where they become diluted down to a healthy degree. Were it not for these life-saving winds, Chicago would soon be depopulated by a malarious plague. It is not necessary that the organic matter whose decomposition gives rise to malaria should belong to the animal world. The vegetable kingdom will furnish it equally well. Thus it is that the atmosphere is rendered malarious or bad in the vicinity of marshy districts. During the rainy or wet season this land is covered with water; the vegetation thereon becomes water-soaked. The hot sun beats down upon it and we have the two prime factors of decomposition, *heat* and *moisture*. On high and well drained land this cause for malaria will not be found, since the water will run off and soak away as fast as it falls, leaving but little remaining when the sun appears, so

little that it is soon absorbed by the sun and carried away, thus removing one of the essential elements for the organic decomposition and the production of malaria. It has often been said, and with truth, that new settlements are particularly prone to be unhealthy, are in a particular manner afflicted with malaria. Bearing in mind what I have said about the nature of malaria, and discarding all consideration of that particular malarial element which is capable of producing Intermittent Fever, of the nature of which I have confessed our present ignorance, this phenomena is very easy of explanation. All land, all soil that has never been before worked is particularly rich in organic matter. The leaves from the trees have for centuries been dying, decomposing and yielding their organic constituents to this earth. The birds and wild animals which from the beginning of time have roamed over this virgin land have deposited their organic excrement upon it. The winds have wafted organic material from far-off cities to it ; while countless myriads of animals have died and decomposed on this land, yielding up their component parts to it. The rains and snows of centuries have washed all this organic material into the earth, until this land fairly teems with organic wealth ; like the untrodden prairies of our western country it is black with organic richness. Some little of this material is utilized in giving nourishment to the grass and

trees which grow on this soil; still, but a very small proportion of this organic matter is thus consumed, and what little is used is returned a hundredfold in the manner I have indicated above, until the subsoil of this region is fairly reeking with organic elements not exposed to the sun, while that very near the surface is consumed by the grass and trees, as I have already pointed out. This soil contains moisture. Man and civilization come along; the plough turns up this land; this enormous accumulation of organic matter is exposed to the sun. What have we? *Organic material, heat and moisture.* What results? *Organic decomposition and malaria.* In addition to this fact, poisonous gases will be developed also from the decomposition of the organic waste which always necessarily attends the presence of man, and which, owing to the imperfect methods of drainage or removal which always obtain in new settlements, will not be taken from, but allowed to remain in close proximity to the residents, there to decompose and render the air malarious. In course of time, as the ground becomes more cultivated and successive crops are taken from it, the locality loses its malarious character, the air becomes purer, because the excess of organic matter is consumed in giving nourishment to vegetable life; until finally this depletion becomes so great that it is necessary to furnish to this same

soil decomposing organic matter in the shape of manure, else the land will be too poor in these elements to furnish nutrition to vegetable life. Again, I find it stated that malaria is very prevalent in the northwestern parts of the city of Philadelphia and in West Philadelphia. That it occurs on high ground, where a large amount of soil is continually disturbed in grading streets, draining, etc. Here, again, we have the conditions to which I have already referred, the exposure to the heat of the sun of large masses of moist organic matter (which has hitherto been buried away from the sun's influence), and its consequent decomposition, with the liberation of poisonous gases and the production of bad air. In cities a great and prominent cause of malarious or bad air is found in the method now in use of illuminating the streets and buildings with our ordinary gas. Illuminating gas is a compound of the two gases, carbon and hydrogen. When the match is applied to this compound a chemical change takes place. The carbon unites with the oxygen of the surrounding atmosphere and carbonic acid results. Not only is a very poisonous gas thus formed, but the vivifying element of the air, the oxygen, the principle which is so requisite to healthy life, is consumed in large quantities. You have very little idea how great this source of contamination is in large cities. To impress it on your memories, I will quote from

an article in the *Revue Scientifique*, by M. G. Robinet, who says: "The combustion of illuminating gas, in Paris (218,813,875 cubic metres) alone, produced last year a quantity of carbonic acid thirty-five hundred times more considerable than all the dead buried in the cemeteries during five years could give at the maximum rate of exhalation. The grand Opera House alone gives out every year thirteen times more carbonic acid from its gas lights than could be disengaged from all the cemeteries put together, even if all their carbon were converted into gas." Will you wonder any more at the sense of languor and oppression, sometimes amounting to a positive headache, which you so often experience after a long evening passed in a crowded theatre? Will you wonder at the pale, anaemic, cachectic appearance of so many of the residents of a large city? The electric light now coming into such general use seems to promise a relief from this source of impure air, and this alone should be a great argument in its favor. Another source of impure air in cities may arise from the ice supply. If this ice be cut from impure water, it will necessarily contain some of the impurities of the water from which it has been cut, and melting, will liberate these particles, allowing them to be wafted through the house. To illustrate this means of contamination, I will quote from the Louisville *Medical News*, in which, in

the course of an article on "The Sources of Ice Supply," the editor says, "Again, any one who has traveled from Joliet to Chicago, on the St. L. A. and C. R. R., cannot have failed to notice the long line of ice storehouses which stretch for miles along the banks of the Des Plaines river. This beautiful stream is one of the sources of the Illinois. It runs through miles of rich prairie land, and formerly drained nothing worse than the many farmers' barnyards, and a dozen thrifty villages along its banks; but now, alas! it is disgraced for a considerable part of its course by the companionship of the Illinois and Michigan canal, the outlet for the sewage of Chicago—a sluice of filth which might well put in a claim for rivalry with the Thames, after London is passed. Not a fish dares venture into its water; not a stranger approaches its bank without holding his nose; and upon either side of it is a strip of country where filth diseases abound; diphtheria, for instance, being a perpetual heritage to the unfortunate inhabitants. A curious situation for the sanitarian to contemplate. On one side is the loveliest of the 'laughing rivers that run in haste to form the Illinois; ' upon the other, and at a higher level, the open sewer of a mighty city rolls its stinking sheet of suspended filth sluggishly on to the same destination, and between the two a narrow strip of land covered with houses wherein is stored the ice

for Chicago. It may be urged that there is no surface communication between the waters of the river and the canal ; but who can doubt that there are many subterranean courses of contact ; and at times of freshet, when the Des Plaines overflows its banks and the canal is high up in its walls, there is doubtless a commingling of the waters at some points above ground. Besides, if direct communication could be proved to be impossible, who will say that nightly the clean water of the river does not absorb myriads of disease-producing germs from the vapors and exhalations that arise from this uncovered sewer ? All the laws regulating the diffusion of microscopic organisms testify to the truth of the proposition ; and if there is any warrant for the statement that diseases of a zymotic character can be propagated through drinking water, the dweller on the banks of the Des Plaines, from the point where the canal first approaches the river to its mouth, had, during a fatal epidemic in Chicago, better say his prayers before placing a cup of its innocent-looking water to his lips. We believe that the ice supply of Chicago is chiefly derived from this source ; and if so, does it not account, to some extent, for the present unusually bad health of that metropolis ?" Fortunately for the residents of Philadelphia this danger does not exist in ice cut from the Schuylkill river, since Professor Leffmann tells us some interesting facts

concerning the purity of this water, which will possess so much interest for all residents of the city that I give his remarks in full: "It is my purpose to take only a few minutes to give some results, or rather conclusions, which have been derived from recent analyses of our water supply. Very little is heard about the hygienic relations of Schuylkill water, probably because public opinion has long since settled to the conclusion that it is a good water. Nevertheless, as visitors sometimes complain of it, and as newspapers in their flings at the Water Department not infrequently condemn the quality as well as the quantity of the supply, I have ventured to take up the Society's time long enough to say that examinations made at various times during the winter and spring have shown that the water is of fair quality and cannot be regarded as an active cause of disease in our city. It is an insipid water, lacking the pleasant taste and sparkling character of spring water, especially of the so-called hard waters, and this lack is often taken as evidence of impurity. During the periods of freshet it becomes quite turbid, from the suspension of particles, mostly silicious, but such suspended matter rarely exceeds a grain or two to the gallon, and the individual particles are too minute to cause any irritation. In the turbid water several species of harmless animalculæ can usually be detected. In making any brief statement of a composition of

a water we are embarrassed by the fact that the modern methods of water analysis are very strictly technical; they give us, not the impurities themselves, but the amount of certain indications of impurity. Without stopping to explain the mere chemical phase of the question, I will simply give a comparison of a recent analysis of Schuylkill water with that of two samples of London water analyzed by the same method and considered excellent waters:—

	Schuylkill.	Kent Company, London.	Chelsea, London.
Chlorine.....	0.53	1.2	0.51
Ammonia, from organic } matter.....}	0.0028	0.0022	0.0035
Total solids.....	7.00	34.00	17.64

All the figures are grains to the imperial gallon. The Society of Public Analysts, of England, has recently proposed a system by which each factor in the composition shall be valued by an arbitrary number, and all the numbers being added will give us a figure representing the standard of the water. In good waters this sum will not exceed 35. Schuylkill water varies from 17 to 23, so that it comes decidedly below the limit. In regard to Delaware water I may remark that, so far as I have examined it, it is not as good as the Schuylkill water. The amount of organic matter is higher and the microscopic examination shows forms of life which are frequent in decomposing materials."

This question of water is a very important one in connection with the production of malaria, as evidenced by the testimony of many writers, the most recent observation I have found on the subject being as follows: "In reference to the increasing distribution of malaria, it is worth noting that water is often the vehicle by which the malarial poison reaches the system, and that it is often charged with malaria at points distant from the places where it comes to the surface and is used. Thus, it happens that soils are often reputed malarious, when, in reality, the unhealthiness is due to the fact just stated." Another prolific cause of malaria or bad air is the occupancy of a sleeping or sitting room by too many persons. Experience teaches that while life can be supported with a lesser quantity, yet in order that the various functions of the human body may be carried on properly and without let or hindrance, each adult should be supplied with three thousand cubic feet of air every hour. This amount of air will be contained in a room ten feet wide, thirty feet long and ten feet high. Natural ventilation, that is to say, the interchange of air through the cracks of doors and windows and through the walls of a room or house, will change this volume of air, will renew it, three times in the course of an hour. If special means for ventilation exist, if sufficient ingress for pure and egress for impure

air be provided, this volume of air will be renewed six times in every hour. So that under the first condition not more than three, and under the second condition no more than six persons should occupy a room of the dimensions given above. How seldom this rule is observed, you all know. These calculations do not take into consideration, you will notice, the consumption of oxygen by the carbon of illuminating gas, to which I have referred. And when you realize that one burner will consume more oxygen in a given time than one man, you will appreciate how important a factor this may become in deteriorating and rendering malarious or bad the air of a room. The brightly lighted sitting room, with its cheerful log fire, all the windows and doors tightly closed against Jack Frost, and the crevices hermetically sealed and stuffed, so that not a particle of the pure and bracing air of the cold and wintry night may enter, with the family of ten or twelve passing the long evenings of winter in a room but little if any larger than the one I have described, may be very cosy and comfortable, but it is terribly unhealthy. Again, many persons have a habit of making their own soap, for washing purposes, using the waste fat in this way. This is a most reprehensible and unhealthy custom ; the fat has been kept for some time, until it is in a state of decomposition, and then put into the pot to boil, it sends foul gases all

through the house. Better dispose of your fat in some other way, it will be more economical and much more sensible; will be more healthy and will greatly reduce your doctor's bills. Slops left standing in an uncovered bucket in the back street for hours, until removed in the swill cart, will generate bad air. The sun beats down on this moist mass and the gases of decomposition are liberated. Foul and exceedingly poisonous gases often gain admittance to a house where the plumbing is not perfect, through the outlets for waste water and the overflow. If you have reason to suspect this, indeed, whether you have or not, it will be a wise precaution to have a metallic slide arranged to the overflow outlet, and keep it always in position unless using this opening, and to always have the stopper of all your basins and bath tubs in position, with an inch or two of water in the basin. While it is true that much disease is caused from foul air entering the house from the drain pipes, yet such ought not to be the case, there is no necessity for it. The hue and cry against wash stands and water closets is an unjust one. If properly arranged and drained they are perfectly harmless. This prejudice against them has arisen, not from the fact that the system is wrong or injurious in itself, but because it is not properly carried out. How can you expect an ordinary plumber, who, as an apprentice, has mechanically learned his trade

from his master, to know anything about scientific plumbing? He may do his work in a masterly and perfect manner, so far as the mechanical part of it is concerned. But what does he know about the principles of hygiene. I make the assertion that, if properly arranged, water-closets and sinks are by far the healthiest means of getting rid of refuse matter, and will support this assertion by the statement, that I would be perfectly willing to live in a house with a water-closet, sink and bath tub in every room, provided I had personally superintended the plumbing of the house. I will have more to say on this subject in the last chapter. The slop jar in a bed chamber is a common cause of impure air. You wash your bodies and empty the water into this jar. The water contains scales of your skin, as well as many of the dead particles of your body given out through the pores of your skin. This matter is organic, and undergoes decomposition. Unless the slop jar is thoroughly washed out every day it soon becomes foul, and is then an unhealthy article of furniture. Keep it covered all the time. Another prolific source of bad air in winter time arises from the modern method of heating houses by furnaces in the cellars. In the majority of instances the air chamber of the furnace derives its supply of air from the cellar, which must of necessity be very impure, since it is impregnated with the ashes and coal dust and the

various impurities usually found in a cellar. If the air chamber is supplied with pure air from outside of the house, if a receptacle with water is placed near the register, and if a proper outlet in each room, for the air when it becomes foul, exists, I can see no valid objection to furnaces. They certainly heat a house more thoroughly than any other system in vogue in ordinary dwelling houses, and if their drawbacks be reduced to the minimum their use is to be commended. Soiled clothing allowed to accumulate in a room will vitiate the air of the apartment. The soiling is due to dead organic matter derived from the body, and it will decompose and give rise to malarious or bad air. In this connection a most reprehensible practice in common use must be emphatically condemned. I refer to the habit of hanging wet diapers over a chair, before the register, to dry. Children are particularly susceptible to the noxious influences of bad air, and this practice will so vitiate the air of their rooms as to work serious injury to their little bodies. Wash each diaper as it is soiled and hang it out of doors, in the sun, to dry. There is a very important factor in the production of bad air which is so common and ought to be so thoroughly appreciated, that it seems almost foolish to refer to it here, still, as it does exist and as very little effort seems to be made to remedy it, it may do some good to dwell on it for a

little while ; I mean dirty streets. Street dirt is principally derived from two sources ; slops and refuse from houses, and excrement, both solid and liquid, from horses, dogs and the like. All this matter is organic and undergoes organic decomposition, with the consequent production of malarious or bad air. This is really the principal source of air contamination in large cities, as, witness the city of New York last spring and the city of Philadelphia at present. Does it not seem strange that intelligent men will go to all the trouble and expense that they do, to remove from their neighborhood all human excrement, and yet seem so indifferent to the presence of such enormous quantities of animal excrement in the streets, which is, in reality, nearly, if not quite as poisonous as the former. Consistency, thou art, indeed, a jewel, a jewel possessed by but very few inhabitants of our large cities. In my last chapter I will propose a remedy for this state of affairs, which may, indeed, seem utopian in conception and impossible of achievement, as it really is under our present selfish and corrupt system of government, but a plan that would be perfectly practicable were our city governed by intelligent men, who had the welfare of its inhabitants to guide them in their administration. Whatever city does first adopt this plan will find a wonderful diminution in its mortality rate, and will deserve and receive the

gratitude of the whole country for setting them an example, by following which the health of the nation will be greatly benefited, and the life of man prolonged. Having cursorily discussed the principal causes of bad air in the city, let us return again to the country, and see in what localities and under what conditions we will there find malaria. I have told you that malaria *can* exist everywhere. I have told you how malaria can and will be produced in houses, from what might be called hygienic defects of living. Let us now see what localities in the country are particularly prone, I might say naturally, to be malarious. Let me again say that I am not discussing the poisonous element of bad air which is capable of producing Intermittent Fever, and about the nature of which we know really nothing ; this poison is developed and exists in certain localities which I could mention, and does not exist in others ; but the malaria of which I am writing, the bad air I am telling you about, may be found anywhere, as a result of man's negligence or want of knowledge. A healthy country locality might be described as follows : High ground, without too much shade, and with a rather loose and porous soil, preferably a gravelly or gravelly and clayey soil. Such a briefly described locality will be naturally free from malaria, and if bad air does there exist, it will surely be the fault of the resident or of some

neighbor. When I say high ground, I mean comparatively, and not positively high. Country locations may be very high when compared with the neighboring city or river from which the comparisons are made, and yet be very low when compared with the country immediately surrounding them. Such a spot will not be, naturally, free from malaria or bad air. A pen picture of a country location which would be naturally malarious, would read as follows: Ground low when compared with the surrounding country, basin-like in character, with a hard, clayey, or otherwise impervious soil. Into such a location the refuse from the surrounding country would naturally drain. The rain descending from above would, of course, flow down from all directions into this basin, and in its downward course would carry along all the dead organic matter for some distance around, which would accumulate in a rotting mass on this low ground. The hard, impervious soil would refuse to allow this water to drain away through it, thus compelling it to lie on the surface until, in the rainy season, it would almost form a small lake. This, in the first place, would be unhealthy, since it would, of necessity, render the location very damp. But a still greater danger here exists. This mass of water, with its load of organic matter, lies on the surface of the ground. After a while the sun appears, and you can anticipate what

I am going to tell occurs. Here, again, we have the dead organic matter, the heat and moisture. Decomposition necessarily ensues, and the air becomes bad. I am sufficient of a farmer to tell you that such soil will produce very indifferent crops. The dead and decomposed organic matter, which in porous soil would soak into the ground and furnish nourishment for vegetable life, will here lie on the surface, and furnish poison for human animal life. How can you expect a locality that is too poor to grow potatoes to be rich and good enough to grow children. Just here, I will enunciate a rule, which is almost universally correct. It will serve as an almost infallible guide in selecting a country home. When you have found a high location, look into the character and nature of the crops produced. If you find them first class, you can, in the great majority of cases, make up your mind that such a location will make a healthy residence. Of course, you must find out whether these crops are derived from the natural soil, since almost any ground can be made to produce very good crops if thoroughly worked and manured. Apart from the nature of the locality, the same carelessness in properly disposing of organic matter will produce malaria in the country that I have indicated in speaking of the city. But in the country there are some particularly dangerous

practices in vogue which demand a moment's consideration. Thus, in many cases where a house stands on high ground, surface drainage is resorted to. The drain pipe from the water closet and bath tub will discharge its contents on the surface of the ground some twenty or thirty feet away from the house. This is most reprehensible. The supposition is that because of the sloping ground this refuse will all drain away. While very nice in theory, this is not the case in fact. At first most of this matter will drain away; but in time, and especially if the closet and bath be much used, the ground in the vicinity of the open mouth of the drain will become so saturated with this water that it will be unable to absorb any more. It will then be compelled to run along the surface. The grass and weeds will entangle and hold some of the organic matter, which will decompose, and when the wind is blowing towards the house, this poisoned air will be carried into it. To avoid this really great danger; great care and intelligence should be exercised in arranging the drainage. If a swift flowing stream, in which there is always plenty of water, even during the greatest drought, pass at all near the house, your drain pipe should empty into it. But unless there is always plenty of water and a sufficiently strong current to carry the waste away, do not think of draining into it. Because when the dry spell comes,

and the bottom of the small stream or creek is exposed to the sun, there will be found the accumulations of your winter's drainage, ready to decompose and poison the air. If you have no convenient stream, select the *very lowest* point on your land and dig there a deep well. Brick the sides of it, from top to bottom, and cement it thoroughly, so as to render it strictly water proof. Let your drain pipe empty into this well. The bottom of the well, being earth, will allow the liquid portion of the waste to drain off out of harm's way. The solid portion will accumulate, and the well should be emptied when it becomes full. An air-tight covering should be always in position on top of the well. If you take these precautions, and if your plumbing be good and your water-closet trap efficient, you need fear no danger whatever from this source. It would be well, if possible, for the family to absent themselves from home when the well is being emptied, and for you to employ a man for this work who makes a regular business of it, because such a man will not be affected by the poisonous gases, since usage breeds a tolerance. While, if you were to employ a man unaccustomed to such work, you might become the innocent and unwilling cause of his sickness, and may be of his death. Finally, to sum up, you must understand, from what I have said, that malaria will always be present wherever dead and decomposing organic

matter is, and that if such matter is allowed to accumulate in the vicinity of human habitations, and if proper measures to destroy it are not instituted, malarious or bad air will surely be the consequence, and the inhabitants of such a locality will surely suffer from its baneful influences. You also understand, to some extent, how really difficult it is, in many cases, to avoid the production of this bad air, how easily it is generated and how insidious may be its approach. To make you realize still more how insidious may be the march of this arch-enemy of health and longevity, I will conclude this chapter with a quotation from the *British Medical Journal*, in which Messrs. Maguire & Son, of Dublin, who have had great experience in the examination of dwelling houses say: "In endeavoring to awaken public attention to the importance of sanitary reform, we here enumerate thirty of the dangers to health which we most frequently detect in our sanitary examination of houses. *Any one* of these defects, by admitting foul air, constitutes a real danger to health; but, in the large majority of houses many of these defects may be found existing together, and in some houses they may nearly all be found, rendering those houses pestilential: (1) Common built drains under houses; large built drains under or near mansions. (2) Pipe drains with leaking joints, or broken, laid under houses, saturating the basement

with sewage. (3) Pipe drains laid under houses, without sufficient fall, or with fall the wrong way. (4) Drains of every kind, without proper intercepting traps, admitting foul air from sewers or cesspools. (5) Drains of every description, without a constant free current of fresh air through them. (6) Rat burrows from built drains or sewers undermining flags and floors, and admitting foul air to house. (7) Rat burrows worked alongside perfect pipe drains from street sewers, and into houses. (8) Defective connections between soil or waste pipes and sewers, admitting foul air to houses. (9) Soil pipes passing through interior of house, under almost any circumstances. (10) Soil pipes inside or outside houses, without any or sufficient ventilation. (11) Defective water-closet apparatus. (12) Water-closet cisterns with overflows joined to soil pipe or drain. (13) Safe trays under closets, connected to soil pipes or drain. (14) Two or more water closets or sinks on same soil pipe, untrapping each other when used. (15) Sink overflow pipes joined to soil pipes untrapped, or with trap liable to untrap. (16) Water supplies to sinks taken from water closet or other contaminated cisterns, and used by careless servants to fill bed room caraffs for drinking. (17) House cisterns and tanks with overflows direct into soil pipes or drains. (18) Traps of every description with-

out ample ventilation to guard them. (19) Scullery sinks connected direct to drains, admitting foul air to houses, not only through traps, but through joints of brickwork all round, as shown by our smoke test. (20) Bell traps, with loose covers, on scullery sinks connected to drains. (21) Gullies or traps in sculleries, laundries, larders, etc., connected to drains, usually dry and untrapped. (22) Rain pipes used as ventilators to drains, delivering foul air near bedroom windows, or under eaves or roofs. (23) Ash pits near larders and pantries; ash pits liable to soak foul moisture through house walls. (24) Defects of drainage and rat burrows, from neighbors' houses. (25) Water tanks in areas, near ash pits or sculleries, and with overflows direct to drains. (26) Wash-stand basins in dressing rooms, connected directly in any way to drains or soil pipes. (27) Water-closet cisterns in return rooms, frequently under bedroom or parlor floors, perhaps with overflow direct to drain. (Sixteen years ago the writer thoughtlessly used a room of this kind, and was attacked with Typhoid.) (28) Cesspools near houses, and cesspools or defective drains near wells. (29) Neighbors' drains crossing under houses or joining drains. (30) Drinking water defects, and all impurities likely to contaminate milk, meat, or food of any kind." After reading this long list, you may wonder how it is

possible for any house to be healthy, when disease has so many avenues of entrance. Truly, our life is one long, continual warfare against disease. But you will notice that all these indications, as well as all the others which I have pointed out to you, depend upon the presence of decomposing organic matter. If such matter is not present, no matter how defective the drainage may be, poisonous gases cannot enter the house, because they cannot exist. Therefore, once more, in conclusion, *malaria means bad air*, and the most frequent cause of this bad air is organic decomposition.

CHAPTER III.

SYMPTOMS OR SIGNS OF MALARIA.

Typhoid Fever has its special symptoms ; so has Smallpox, Diphtheria and Intermittent Fever. And by these special signs or landmarks, as it were, is each particular disease recognized and differentiated. When called to a patient, who at regular intervals has a well marked chill followed by fever, succeeded in turn by profuse sweating and a subsequent restoration to health, the physician at once recognizes a case of Intermittent Fever. So it is with every other special disease. There are certain definite signs and symptoms, the presence of which make known the nature of the disease. It is not so with *malaria*. The conclusion that a person is suffering from malaria must be arrived at rather by a system of exclusion of the symptoms of other diseased conditions, than by the presence of any special characteristic symptoms of this trouble. This is because malaria or bad air will produce, and does produce, such a great variety of symptoms, that it frequently simulates many other diseases. I have told you that pure air is an absolutely essential agent to the healthy performance of duty on the

part of your organs. If, instead of pure, bad air or malaria enters your lungs at every inspiration, and from your lungs enters your blood, the poisonous elements act injuriously on your system at large and interfere with the functions of healthy life. Acting thus on all parts of the body, you can understand how diverse may be the symptoms presented. Every one of us has some particularly weak spot ; in you it may be the lungs, in another the stomach, in a third the kidneys. Whatever injurious agent may act on the body of each particular being will make itself most manifest on this weak spot. So that in one malaria may present symptoms referable to the stomach, in another to the lungs, and in a third to the kidneys. In still another class of cases it seems to exert a depressing and debasing influence on the system at large ; lacking the healthy stimulus of pure air, all the organs of the body seem to imperfectly perform their duty, and a low state of vitality, a depressed condition of the general health, without any definite or peculiar symptoms of any special disease, exists. This is the most common form in which bad air manifests its evil influence. And when you bear in mind the fact that a wholesome supply of fresh air is an absolute essential of healthy life, you can easily comprehend how impure air, even that which does not contain the germ of any special disease, may produce this condition of de-

pressed health, of lowered vitality. So that when a person complains of ill health it becomes necessary, in the first place, to carefully examine him for any special disease that may give rise to the symptoms of which he complains. If after a careful and thorough examination all specific diseases are excluded, the hygienic conditions and surroundings of the individual must be inquired into, and most likely malaria or bad air, from some cause or other, will be found. How many people are there in the world who are constantly complaining. They have no organic disease. They are not confined to the house, but are able to go about. They are not addicted to excesses of any kind. They do not suffer from dyspepsia, neither are they afflicted with constipation. They do not absolutely suffer from headache, but are always verging on that condition. They do not exactly experience nausea, but feel as though almost anything would make them vomit. They feel hungry, and yet when they go to the table an unconquerable loathing for food, takes possession of them. They feel sleepy, and yet when they go to bed they lie awake for hours. They do nothing to exhaust themselves, yet are always tired. They take interest in nothing. Their minds are clouded and their memories poor. Such is a description of a person afflicted with malaria. If such a person lives in the city, let him walk, ride or drive in the

pure air of a healthy country neighborhood; and immediately he feels better, the old symptoms returning, however, when he again reaches his malarious residence. So that when one is not in robust health, yet has neither special nor organic disease, but feels as though (to put it vulgarly) he were only half living, if he can discover no other cause for this unfortunate state of affairs, let him look carefully about him and see whether he be not living in a poisoned atmosphere. Let him remember and realize how many and how unsuspected may be the causes of this impure air, and let him diligently search for, and when found remove, the particular cause in his case. Let him remember the various causes for the bad air I have pointed out; let him not forget how profoundly this malarious atmosphere may affect his system, and let him be ever mindful that I have said that the principal source of this impurity is organic decomposition. I have purposely curtailed this chapter on the symptoms of malaria, for two reasons. *First.* Were I to enumerate all the symptoms producible by bad air, I would be obliged to name every sign of every deviation from health, since, as I have told you, bad air, by interfering with the healthy functions of life, is capable of producing, at times, the symptoms or some of the symptoms of every disease. This would be confusing, unintelligible, and productive of no general good. *Second.* The two

important points for the general public to learn about malaria are, how it is produced and how it can be avoided. Therefore, with this short hint at the symptoms, we will close this chapter and go on to the last and very important one, "*How to avoid malaria.*"

CHAPTER IV.

HOW TO AVOID MALARIA.

This little book is intended for intelligent and thinking people. It would be impossible of achievement, and therefore useless to undertake in so small a volume, the exhaustive discussion of any subject, so I am endeavoring merely to give you the outline, as it were, of the question, the details to be filled in by the thought and reasoning abilities of the intelligent reader. These small popular books on matters pertaining to health would be dry, uninteresting, unintelligible and uninstructive reading, were all the small details and minutiae thoroughly discussed. They would then partake more of the nature of medical text-books, and would be interesting and instructive only to the student of medicine. The busy man of the world would not have time to read them. When, however, this information is condensed, and the salient points selected from it given to the public in a small volume, which can be read in a short time, it will be productive of much good. The uneducated and unintelligent classes will not, of course, read these books; they know nothing and care nothing about the means of preserving bodily

health. The intelligent classes, who will read these books, do know and do care about health. They value it, and are anxious to preserve it to its utmost limit. Such people are blessed with the power of reasoning, and all that is necessary is to direct this power into the proper channel. Therefore I will point out to you the main indications for the avoidance of malaria, and will give certain hints which, aided by your reason, will enable you to avoid in every instance this bad or malarious air. Let us first look into the city. Do not occupy a house until you have had the whole drainage system carefully examined by a thoroughly competent expert. If found defective, do not move into the house, even though you may get it for nothing; if you do you will have more than the amount of the rent to pay in doctors' bills. From what I have told you in the second chapter, you can understand that defective drainage is *the* most prolific cause of *malaria* or *bad air*. Therefore it is of paramount importance that this matter should be carefully attended to. If you intend to build a house, it behooves you to employ only a first-class plumber to do your work. Even if you are close and mean, and desire to economize in other ways, do not begrudge expense in this direction. If you look around, get many estimates from different parties, and finally decide on the cheapest, you may have your foundations, your

brick work, your plastering and your wood work, done for very little money. In a short time the defective workmanship will make itself known, and you will be put to additional expense to have it remedied. The only ill effects, however, arising from this mistaken economy will be some personal discomfort and an additional expense, which, with the original cost, will foot up a sum greater than would have been requisite to have done the work properly in the first place. But how different it will be with the plumbing. If you look about you, and get one plumber bidding against another, you can, beyond doubt, have the plumbing of your house done very cheaply, that is, for a very small sum of money, comparatively speaking. But if it is imperfectly done, the damage resulting cannot be measured by mere personal discomfort or increased expense. Probably the first intimation you may receive of imperfect drainage will be when a serious case of sickness, mayhap a fatal case, appears in your family. The pipes and system of drainage may be sufficiently complete, mechanically speaking, to carry off all the refuse from your house; there may be no leaks and nothing prominently calling your attention to defective drainage. After a while, maybe, some one member of your family, or even possibly the majority or all of them, may become unwell. Without exhibiting any definite symptoms of any

particular disease, they are out of sorts. Formerly, before removing to your present house, they have all been hearty and robust. You cannot account for the change. They may sleep well and yet awake unrefreshed. They may sleep, and have their sleep disturbed by hideous dreams. They may arise in the morning with a dull, heavy feeling in the head, a sense of nausea, a coated tongue, a bad taste in the mouth, and a general sense of lassitude and unrest altogether inconsistent with a healthy body after a night of healthy sleep. They are not sick enough to require the doctor, yet they are not well. They have good appetites, may be, but its full gratification distresses them. In a word the functions of life are imperfectly and improperly performed. The vital power is depressed. For a long time you speculate as to this cause of ill-health, and reason and wonder in vain. Finally your attention is directed to your drainage, and upon careful examination you find it so defective that great volumes of foul sewer gas are allowed to enter the house, and, mingling with the air in your living rooms, to render the atmosphere you use *malarious* or bad. Now will come in the extra expense, and I can assure you that by the time you have brought your plumbing to that degree of excellence necessary to render your house healthy, you will have spent very much more money than you would have done had your

plumbing been properly attended to in the first place. In England, this question has been considered of sufficient importance to have had legal enactments for its solution, and to-day the whole of Great Britain is divided into sanitary districts, with a medical officer of health in each. This officer is empowered by law, and is obliged, to examine every new building in course of erection. If it is being constructed according to the most approved hygienic rules, all is well ; if not, he has the authority to point out in what it is deficient, and direct these defects to be remedied, possessing at the same time the necessary legal power to enforce the fulfillment of his directions. This and other sanitary reforms in England have been so beneficial in their influence on the life of man, that within a few years the annual death rate in that country has been reduced from about eighty-four in every thousand, to only twenty-four in every thousand. In time, it is to be hoped that we will have such beneficial laws in this country, compelling persons, against their own foolishness, to live as they should. At present our people are so busily occupied developing the enormous resources of our great country, that they have but little time to bestow upon the preservation of health. But when we are more developed and commence to have leisure in which to become cultivated, our attention will be given more in this direction.

In the meantime, it becomes the duty of physicians to use all the persuasion of which they are capable, to induce people to live in accordance with the doctrines of hygiene. To still further illustrate the importance of this point, I will quote from the *Medical Times and Gazette*, of England, where, under the heading of "Noteworthy," I find that "The Local Board of Eastbourne have got a clause in their Bill, whereby they are enabled not only to regulate the junction of house drains with the sewer, but to go inside the house and see that it is constructed on sanitary principles, without which permission will not be given for occupation." As I have already indicated, the two great causes of impure air in cities are, 1st. Defective drainage, in its most liberal sense. Any imperfections that may interfere with the thorough removal of dead organic matter, or that may allow the gases resulting from the decomposition of this matter to be returned to the house. 2d. Dirty streets. To remedy this latter condition comes in my utopian plan, already referred to. The most thorough sweeping alone will not and cannot completely clean the streets, more particularly when, as in Philadelphia, they are horribly paved with rough and unsightly cobbles. Notice, some day, when the street sweepers are at work in your neighborhood, what a perfect farce their work is. They sprinkle the streets a *little*, a

very little, and then a number of men commence to sweep. In a short time they raise a tremendous dust, full of dead organic matter, which finds its way into the lungs, eyes and ears of passers by, and is carried by the wind hither and thither, through open windows into houses, and much of it is deposited at some point in the street a short distance away. After a while, these antiquities (street sweepers are always aged and decrepit) succeed in accumulating piles of dirt along the street. As fast as built, they are partially demolished by the horses' feet and wheels of wagons passing over them. In time, a filthy cart appears, and what remains of these dirt mounds is lifted on a shovel and thrown toward the cart. Probably a goodly proportion is deposited in the cart, while the balance falls back into the street, or is carried off by the wind. When the cleaning of a street is finished, it is, of course comparatively cleaner than it was before, but it is far from being positively clean. There is sufficient dirt, enough dead organic matter, to poison the air and render the city unhealthy. How can we do away with this dirt. I will tell you. In the first place, some of the enormous sums of money annually wasted by the administration of our large cities should be utilized to largely increase the water supply, the reservoir system of our cities, so as to make it equal to the demand I am presently

going to make upon it. In Philadelphia, a few of the millions foolishly expended upon our new public buildings would suffice to give us this increased water supply. As far as possible, cobble paving should be done away with, and our streets laid with a smooth, even pavement of some kind, Belgian block, Asphalt, or the like. The stream of water from the fire plugs should have sufficient pressure to throw it with great force more than half across the streets. Every morning at three o'clock, or thereabouts, it should be the duty of every policeman to turn on every fire plug in his beat and to let them run with full force until five o'clock, or for two hours. Let us glance for a moment at the advantages of this plan. Every morning, every single particle of the decomposing organic material which had accumulated the day before would be washed from the surface of the streets, into the sewers. This large and powerful flow of water, rushing through the sewers, would carry everything before it. This daily washing out would so purify and cleanse these previously dirty sewers, that sewer gas would be unheard of; thus not only would the streets be daily *thoroughly* cleaned, but the air of dwellings would be deprived of its most dangerous impurity, sewer gas. This gas is generated in sewers from the decomposition of organic matter accumulated therein. If this matter were removed daily, and the sewers

thoroughly washed out, the production of sewer gas would be an impossibility. The only additional expense attendant upon this plan would be for the extra water supply, and this would be infinitely more than counterbalanced by honest city government. Making the policemen turn on and off the water would do away with the necessity for contractors and their antiquated horde of sweepers. If, however, it was considered necessary, for political purposes, that this army of men should be supported by the city, let me suggest a more useful way than the one in which they are at present employed. Ten years ago, in Florence, Italy, I was struck by the remarkable cleanliness of the streets in the better portions of the city. They were laid in asphalt, and were immaculate. I was at a loss at first to account for this great purity, since horses and wagons were continually passing to and fro. The mystery was solved when I met a man walking in the middle of the street, with a large hamper-like basket strapped to his back and a shovel in his hand. Every particle of horse manure, every piece of paper, in fact, everything excepting the asphalt pavement itself, was dexterously lifted on the shovel and deposited in the basket. Thus, with but little trouble and no attendant dust, were the streets of the better portion of Florence kept marvelously clean. With the flooding in the early morning and the

constant daily gathering of this refuse, dirty streets would be impossible, while epidemics would be unheard of. How beautiful, on a bright morning, to look out of your window and gaze on streets absolutely free from impurity, streets that positively smell sweet. Let me beg any newspaper editors who may read this book to think over my plan, and having recognized the great good to be derived from it, to set apart a space in their papers for the furtherance of this grand sanitary reform. Let them urge the matter upon the attention of the city authorities, and do not rest until the proposition is an accomplished fact.

Dr. Richardson, of London, a Sanitarian of eminence, has printed an address called "*Hygeia, a City of Health.*" There are so many valuable suggestions contained in it, concerning our subject, that I will make a few quotations therefrom. He says, "The most radical changes in the houses of our city are in the chimneys, the roofs, the kitchens, and their adjoining offices. The chimneys, arranged after the manner proposed by Mr. Spencer Wells, are all connected with central shafts, into which the smoke is drawn, and, after being passed through a gas furnace, to destroy the free carbon, is discharged, colorless, into the open air." "Considering that a third part of the life of man is, or should be, spent in sleep, great care is taken with the bed-rooms, so that they shall be

thoroughly lighted, roomy and ventilated. Twelve hundred cubic feet of space is allowed for each sleeper, and from the sleeping apartments all unnecessary articles of furniture and of dress are rigorously excluded. *Old clothes, old shoes,* and other offensive articles of the same order, are never permitted to have residence there." "The houses, being built on arched subways, great convenience exists for conveying sewage from, and for conducting water and gas into, the different domiciles. All pipes are conveyed along the subways and enter each house from beneath. Thus the mains of the water pipes and the mains of the gas are within instant control on the first floor of the building, and a leakage from either can be immediately prevented." I could go on thus for pages, making interesting and valuable quotations from this excellent little book, but instead of doing so, I will recommend to any one who desires to build a truly model house, from a sanitary standpoint, the careful study of this little essay, entitled "Hygeia, a City of Health," by Benjamin Ward Richardson, M.D., F.R.S. In addition to the few measures I have indicated, let me impress strongly upon you what I have already said, that outside of mechanical impurities, malarious or bad air will be produced, in the majority of instances, by the decomposition of dead organic matter, and since the death of organic matter is one of the

necessary conditions and outcomes of the life of the world, it must always take place and its decomposition must ensue, during which process it is separated into its original elements, which elements are unfit to sustain healthy animal life. So that I will make the broad and sweeping statement that, in order to avoid malaria, all dead organic matter must be removed from the vicinity of man while it is undergoing decomposition. This can be accomplished by attending to the following indications. Perfect drainage. Removal of excrement of all kind. Perfect cleanliness of house, person and clothing. Free ventilation. Abundance of sun-light. Immediate removal of all soiled articles. Frequent removal of table slops, and the limited use of gas, or if freely used, an abundant supply of oxygen. I have told you that carbonic acid gas, which is produced in so many ways, is a very important element of atmospheric impurity. The phenomena of the workings of nature, I must also tell you, are very beautiful and very complete, and in no instance is this remarkable adaptability of means to ends more perfectly illustrated than in the disposition of this very carbonic acid gas which is so liberally produced in nature. You now know that this gas is a combination of carbon and oxygen. The carbon, I have told you, is very poisonous to human life, but according to the wise provisions of na-

ture it is this very article for which vegetable life hungers. Therefore trees immediately seize upon and appropriate this carbon to themselves and turn loose the oxygen, once more pure and suited to support human life. So that trees growing in front of your house are very healthy and should be encouraged. They act as scavengers, they purify the air. In his model city, already referred to, Dr. Richardson says that he would have trees growing on either side of every street. Now to the country. Here, of course, you will have the same dangers of impurity to contend against as in the city, if you have the same conveniences. Although the greater space around your house and the lesser interference with the currents of air will dilute and render less hurtful these noxious elements. So that, while, as I say, you must be on the alert against these impurities, just as in the city, yet the greatest danger to be considered in the country is from a naturally malarious or unhealthy location. I have already indicated what localities ought to be unhealthy. To point this I will relate an actual case, which is not by any means an isolated one. I had at one time a patient who lived in a very pretty place in the country. But the land was low and the soil was of heavy clay. His place was lower than his neighbor's, all of whose drainage flowed from every direction into his ground. When it rained the water

would lie in pools, and in dry weather the clay would bake like bricks. His friends would come to see him and admire his place, and comment on the healthy appearance of his family, and think he was so wise to live in the *pure* country air. This was before the scenes. Now take a peep behind them. The children were apparently healthy. They were never confined to bed by sickness. Neither his wife nor himself ever had any serious illness during their residence in this place. Yet the children were cross, peevish and fretful ; their appetites were fitful and erratic ; half the time they were exhausted and wanted to be nursed. Their sleep did not seem to refresh them. One day they would seem well and hearty, and the succeeding one languid, petulant and feverish, without any apparent cause. His wife was a constant sufferer from dyspepsia, which persisted during her entire residence in this place, in spite of the greatest care in eating and varied medical treatment. While the gentleman himself, though never sick, but young, strong, and ordinarily robust, never felt comfortable. He was always tired, and the slightest exertion would produce great exhaustion. Although they both retired hardly ever later than half past nine or ten o'clock, and led the most regular kind of lives, yet they were always uncomfortable and depressed. To such an extent did this unhealthy condition go, that the wife, in

her despondency, was wont to exclaim "*What is the use in living, if I must feel so badly all the time, AND SO UNEQUAL TO EVERYTHING.*" Yet apparently there was no discoverable cause for this condition. Here was a perfect illustration of the evil and insidious influences of bad air; typical cases of malaria. Now note what followed. This gentleman had a relation living near by. But his location was of the nature I have described to you as naturally *non-malarious*. Occasionally he and his wife would visit this place. A wonderful and magical change would occur. A hearty supper would not be followed by dyspepsia. A pleasant evening would be succeeded by a long night of sound sleep, and in the morning they would arise refreshed, while a walk before breakfast would be substituted for the customary languid lolling around in their malarious home. This change occurred so frequently and so universally, indeed, there was not one single exceptional instance, and the change was so immediate and so marked, that the gentleman commenced to think that his location could not be a healthy one. He commenced to investigate, to consider, and to study, and finally concluded that his place was naturally unhealthy, that it was malarious. When he reached this conclusion, he immediately moved. Like magic, the dyspepsia, the malaria, the languor, the inaptitude for work, the general oppres-

sion, vanished, and they were once more naturally healthy and robust young persons. This is not a fancy picture; it is drawn from real life, and furnishes an excellent illustration of malaria. I have said that this book is intended for intelligent persons. Ignorant people will never derive any benefit from such books, because they cannot comprehend the points made. Were I to enumerate all the causes of malaria, and all the means recommended for its avoidance, I would write for many months and would make a book so large and so full of dry details that very few of you would undertake to read it. Yet with such a large volume I could not hope to do as much good as with this smaller one. When one endeavors to instruct intelligent and thinking persons, it is proper that he should direct their thoughtful minds in the proper channel. Too many small details not only insult this presumed intelligence, but render a book so tiresome that it is apt to be laid aside. Therefore it has been my purpose, in preparing this small volume, merely to throw out certain hints, to erect sign posts as it were, which would enable the intelligent man or woman to avoid malaria. I do not claim to have exhausted the subject, by any means; I have not enumerated all the causes of, neither have I mentioned all the methods of avoiding, malaria. But I have said enough to make you reflect, and this is the true

object of all writing. If I have made clear to you the true nature of malaria, if I have established my theory in your mind, and if I have directed your intelligence and your reasoning faculties in the right channel ; if I cause you to reflect, I am deeply gratified, for then have I fulfilled my purpose in undertaking this task. If my few words will cause you so to act as to diminish in any degree the immensity of unnecessary suffering produced by malarious or bad air, my ambition will be satisfied, for to do so I have written this little book. Therefore, asking you to remember that I am writing for thinking people, I will conclude what has been to me a very pleasant duty, summing up in a few words the substance of this little book, which, constituting the essence, so to speak of all that I have told you in it, I will beg you to take seriously to heart, to remember, to ponder over, to reflect about and to act upon. Do so and I assure you we will hear much less about malaria. *Malaria means bad or impure air. These impurities are of various kinds. They consist of any substances which are injurious to the health of the human body. They may be of a mechanical character; but are generally derived from organic decomposition. Everything that has life, be it animal or vegetable, MUST DIE. Everything that dies MUST DECOMPOSE, and everything organic that decomposes MUST PRODUCE BAD AIR, if the resultant*

products of this decomposition become mixed with the air. Bad air depresses the whole system; malaria vitiates the body and interferes with the healthy performance of function of every organ. Its symptoms are innumerable, since it may present some symptoms of every known disease, because, as each specific disease will present symptoms referable to some particular organ or part, according to whatever organ or part may be the seat of the disease, and as malaria will affect every organ or part on account of its deleterious action on the whole system, it may and will offer symptoms of some disease, when in reality such disease does not exist. Since malaria is principally due to organic decomposition and is always produced by it, it MUST be found, to a greater or lesser extent, wherever organic matter is EXPOSED to decomposition, its severity or mildness depending upon the amount of such matter exposed. Since the principal cause of malaria is organic decomposition, and since it is one of the inevitable laws of nature that organic matter MUST DECOMPOSE, therefore it is self evident that the surest way to AVOID malaria is to remove this matter from your presence while it is undergoing decomposition. You now have the question of malaria concisely placed before you. Reflect and think about it. Use your intelligence and your judgment. Act upon the results of this intelligent reflection, and banish malaria from the haunts of civilization. In final

conclusion, one word of wholesome advice. If you value your health, do not use quinine without medical advice. It is a strong medicine, potent for good if properly used, and equally so for evil if improperly employed. It will cure Intermittent Fever, when intelligently administered, and is useful in many other conditions of ill health, but on true malaria, such as I have been describing to you, it will have no good effect whatever and may do much harm. If you ask a druggist about the soundness of this view, he will tell you it is false, because a large proportion of his profit is derived from the popular use of quinine; but any intelligent, conscientious and unprejudiced physician will substantiate my statement.

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VACCINATION:

PRO AND CON.

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P R E F A C E.

In a few simple words will be given the reasons why this little book has been written. The fact that certain persons, more particularly in the Old World, have recently attempted to cast vaccination into disrepute, and have, by numerous devices, sought to prevent persons from resorting to it as a preventive against smallpox, has induced the author to make an impartial study of the question.

Information has been gathered from all available sources, and the question has been viewed carefully and from an impartial standpoint, with the result of convincing the author that in vaccination properly performed, and in this measure alone, can we find immunity from this terrible disease.

The reasons that have led him to this belief will be given, so that the reader may form his own conclusions.

It has seemed wise to "*take the bull by the horns, as it were,*" and to anticipate the opposition which is as yet only in its incipiency in this country, but which, if not checked in the bud, may blossom into dangerous fruit.

After discussing the question of vaccination, a short chapter will be found on the hygiene of small-pox.

It is sincerely hoped and confidently trusted that the questions herein discussed and the facts stated may result in convincing all who read of the efficacy of vaccination.

VACCINATION.

PART FIRST.

VACCINATION—WHAT IT IS—HOW DISCOVERED—WHAT IT DOES.

Most persons have only a hereditary and very illy-defined notion of vaccination. They regard it as a something, as a mysterious operation, which if successful, *if it takes*, confers upon them immunity from smallpox; but what it really means, how it originated, why it protects or how it acts, they know not; no one has ever told them. Their parents before them have been vaccinated, and so when an epidemic of smallpox comes around, off they run to the doctor and are vaccinated, because they have the idea, gained in some vague way from parents or friends, that this little operation has some mysterious power to protect them from the disease. But they know not how to reason for themselves concerning it, and how to determine whether or not they are receiving a benefit from it.

Therefore they are ready to receive the conclusions

of anti-vaccinators, if perchance they happen to know of a single instance of unfortunate results from vaccination among their friends, without being able to intelligently reason for or against the operation.

If they know all about it they are better prepared to use their intelligence so as to determine for themselves whether or not the operation should be performed upon them. In this belief, I deem it wise to place the whole question before the thinking public.

I will now, for a brief space, in plain words, tell you what vaccination means.

Vaccination consists in an operation by which the system of man is so impressed by the introduction of a foreign substance, and the blood so altered by changes which this matter produces therein, that even though the successfully vaccinated person may thereafter be exposed to the influence of the smallpox poison, yet it will not find in his system the conditions necessary for the development of the disease. This is, in a small compass, a comprehensive definition of vaccination, and it is my purpose in this little book to be brief; I do not intend to waste any words, but to give you, in as short a space and as concisely as possible, the principal points of the subject

under consideration. By doing so, I feel that you will read it, while, were I to be tiresomely verbose, you would cast it aside, and my purpose in preparing it would be defeated.

The interesting points touching the discovery of vaccination next claim our attention. Some of the most wonderful and important discoveries of the world have been, as it were, the result of accident, of chance ; that is to say, chance has brought to the notice of some master mind capable of utilizing and developing them, the phenomena or material from which great discoveries have been made. Vaccination is a remarkable illustration of this proposition.

Towards the close of the last century, a young man named Jenner was studying medicine in the house of Mr. Ludlow, a surgeon of Sodbury, near Bristol. It was customary for the young student to be present when his master was treating patients, in order that he might become practically familiar with the means of detecting and curing disease. One day, a young country woman came to the office of Mr. Ludlow for treatment, and while there, the question of small-pox coming up, she innocently and thoughtlessly made the remark, "*I cannot take that disease, because*

I have had cowpox.” She little thought that by this simple remark she was laying the foundation for a discovery that would electrify the world. The active, penetrating mind of Jenner was struck by the remark. He treasured it in his memory, and never missed an opportunity of verifying the truth of this carelessly uttered statement.

He found it to be a common belief among dairy-maids, that those who had once had *cowpox* enjoyed an immunity from smallpox. Observation convinced him that this belief was more than a superstitious notion ; he soon saw that there was much truth in it, and he commenced to reason something after this fashion.

If *cowpox* *naturally* produced does give immunity from smallpox, why will not the same disease *artificially* developed confer the same protection. He was laughed at and ridiculed, as all great discoverers ever have been. He was, however, firm in his belief of the truth of his idea, and, nothing daunted, pushed forward in his good work, that was destined to make his name immortal.

For more than twenty-five years Jenner and his theory were sneered at. The public paid no attention

to it or him, while physicians pooh-poohed the idea as preposterous. Finally, Jenner's triumphal day came. The day that should be forever celebrated, throughout the civilized world, as the one on which was made public and demonstrated as potent the greatest discovery in preventive medicine that has ever occurred in the history of the world.

On the fourteenth day of May, 1796, Jenner vaccinated James Phipps, and with all the nervous anxiety of Fulton waiting to see his little boat move when the steam was turned on, he waited and watched.

To his unspeakable joy, he saw all the different stages of *vaccinia* or *cowpox* occur regularly and perfectly, when, with an exultant shout, he cried out to his hitherto sneering confreres, "Behold the consummation of my dream."

Still he had many trials yet to endure before his newly discovered and demonstrated fact became a generally accepted one. Just as we declared our independence from Great Britain in 1776, and then passed through eight years of doubt and uncertainty before this declaration became an accomplishment, so poor Jenner was doomed to undergo many tribu-

lations before his ridiculed announcement of 1796 became an enthusiastically accepted fact in 1799. In 1798 he wrote and published a work containing the evidence he had accumulated concerning vaccination, which, though very convincing, still left many in doubt, so conservative were the physicians of Great Britain and so indisposed to believe in his wonderful discovery. The truth must always prevail, however, and finally, in 1799, about seventy of the most distinguished physicians and surgeons in London signed a declaration of their entire confidence in the benefits and advantages of his discovery. When once accepted, it was but a short time before this discovery became known everywhere, and the name of Jenner was enrolled prominently among the great men of the world. Honors were now heaped upon him ; he was made an honorary member of all the principal learned societies of the world, while the English Parliament voted him grants aggregating one hundred and fifty thousand dollars.

It will now be in order to examine into the manner of action of vaccination, and to ask *how* it affords protection.

In this connection, it will be possible only for us

to understand the facts; the minute questions and reasons why these facts are facts, will, I fear, ever remain an impenetrable mystery.

Smallpox belongs to a class of diseases known to the physicians as "Zymotic diseases." This means a disease that is produced by a species of fermentation in the blood. The active poisonous agent is introduced into the body, and meeting in the blood with some necessary elements (the nature of which we know not) a sort of fermentative change takes place, and the resultant product of this process is the particular disease under consideration.

For this change to be produced it is necessary that the poison introduced from without should find some suitable elements, a favorable condition of the blood, for its development into the disease. If this condition is not present the disease cannot be produced, no matter how much of the poison may be introduced. It falls upon barren ground, as it were, and its power for evil becomes absolutely nil.

This will explain to you the apparently mysterious fact that while a given number of persons may be exposed to contagion, yet only a limited number are afflicted with the disease, since the blood of the rest

happens to be in such a condition that it will not furnish the necessary elements for development of the poison.

Thus, then, you will be prepared to understand that for the development of smallpox in an individual, two conditions are absolutely essential, and without them the disease cannot exist.

First, the poison must enter the system, and secondly, having gained access to the blood it must find therein conditions for its growth and development. It must be planted in good soil, suitable to produce a crop of smallpox, as it were, else, like vegetables planted in unsuitable ground, you will never see any more of it. What these conditions are, of course, we do not know ; science has not yet been able to penetrate this mystery, and we can only determine the presence of this state of the blood in one of two ways, either by exposing ourselves to smallpox, when, if they exist, we will take the disease—a very bad and not to be desired test—or by vaccination.

You will now be almost prepared to anticipate me when I say that vaccination confers immunity from smallpox by so altering the condition of the blood that when the poison of the disease is introduced sub-

sequently, it falls upon uncongenial soil ; it does not find the necessary conditions, and the disease is not developed. So thought Jenner, and such has subsequent experience proven to be the case.

When a person is vaccinated successfully, the matter placed on the abraded surface is absorbed into the blood and produces a constitutional disease known as *vaccinia*. It circulates throughout every portion of the body, and hunting up the various elements necessary for the development of smallpox, alters or destroys them. It is at the present time a mooted question whether *vaccinia* is a distinct disease or is a modified form of smallpox. This, however, is of no practical moment, since we do know that it possesses the alterative or destructive power described, and this is what we desire. It may be a matter of scientific interest or curiosity to determine the identity or non-identity of the two diseases, but for all practical purposes we know now as much as we require.

So, then, vaccination affords protection from smallpox, by producing in the body a constitutional disease, which runs a regular course, that is similar to and possibly identical with smallpox itself, but of a

character so mild as to be utterly and entirely harmless, but which so alters the condition of the blood as to render the development of the disease itself in its more virulent form almost an impossibility and certainly a very great rarity.

For many years previous to Jenner's great discovery an operation for protection against *smallpox* was resorted to, which was known as *inoculation*. It consisted of inserting beneath the skin some of the matter from a smallpox sore, which produced in the person so inoculated true smallpox, but of a type so mild as to prove but very rarely dangerous, while at the same time, it afforded, in the large majority of cases, protection against a subsequent and more severe attack of the disease. This practice of inoculation was in vogue in very early days. The Chinese had resorted to it more than twelve hundred years ago, and according to Collinson * it was in use in Persia, Armenia and Georgia many centuries since.

But since inoculation really produced smallpox, it proved to be more of an evil than a benefit, because when one man, say, was inoculated and

* *Smallpox and Vaccination Historically and Medically Considered.*

received smallpox, he might be the means of communicating the disease, in an aggravated and fatal form, to many who had not been inoculated ; because, as you can understand, the man who had been inoculated successfully had smallpox as truly and completely as any one could have it, only it developed less dangerous symptoms, and was much less likely to prove fatal than when contracted in the ordinary way. Still it was and is a fact, that a man with a *walking* case of smallpox can communicate a fatal attack of the disease to some neighbor. Hence these inoculated persons were deadly enemies going about among their fellows, and carrying disease and death to all who had not been inoculated. Had every person been inoculated, then indeed would this procedure have been a blessing, and surely would it have prevented the ravages of smallpox. But such not being the case, inoculation became more of an evil than a blessing, since it tended to perpetuate and even to increase the afflictions of smallpox. Hence inoculation was unsatisfactory, and being pronounced injurious, fell into disuse :—

Soon after the true danger of inoculation was recognized, Jenner made his great discovery, which

in substance is as follows, as stated by Jenner himself in his "*Inquiry into the causes and effects of the Variolæ Vaccinæ*," published in 1798:—

1st. This disease (vaccinia) communicated to man has the power of rendering him insusceptible to smallpox.

2d. That the cowpox or vaccinia might and can be communicated from the cow to man.

3d. That the cowpox once ingrafted on the human subject might be continued from individual to individual by successive transmissions, conferring on each the same immunity from smallpox as was enjoyed by the one first infected direct from the cow.

In other words, it was and is believed that the artificial production of cowpox in the individual so alters some of the constituents of the blood, that even though the poison of true smallpox may be introduced therein, it will not find the elements and conditions there necessary for the development of the disease, since the poison of cowpox has destroyed or altered these elements or conditions. So, then, vaccination confers immunity from smallpox by altering the condition of the blood from that favorable to its development to a state in which its production is

impossible. In this belief the world was happy for many years, believing, as it had good reasons to, that at last had been discovered a means by which this terrible disease could be driven out of existence. They were undoubtedly right in this belief, if subsequent experience is to be relied upon.

Human nature is ever restless and uneasy, however, and some one must always be agitating and discussing every question that exists, while, unfortunately, there are and ever have been many narrow-minded men, who, viewing a subject only from their own standpoint, and neglecting to go around and inspect the other side of the question, have judged partially and unjustly, when, I am sorry to say it, they find all too many men ready to blindly follow the erroneous and pernicious doctrines that they promulgate.

For many years vaccination was accepted by the universal world as an almost absolute protection against smallpox. Lately, within a very short time, some German physicians have raised a hue and cry against this beneficent and divine discovery, and have attempted to cast it into disrepute.

The agitation has been taken up in England and has gained many adherents, while in this country the anti-vaccination fever has but just commenced,

and will require heroic treatment to throttle it in its infancy, ere it gains strength and vigor.

The anti-vaccinators have undoubtedly some good reasons for their course, but they fail to make a distinction between the end to be acquired and the means by which this end is accomplished. Because vaccination does in some cases, and, unfortunately, in a good many, produce worse evils than smallpox itself would or could, therefore they reason that vaccination is wrong and should be abolished. They condemn the entirety without considering or endeavoring to correct the particulars that make this entirety dangerous.

That there are certain dangers to be dreaded, that certain evil results can and do occur from vaccination as practiced to-day, no reasonable man will or can deny. Whosoever has had experience with vaccination must oft and again have found this to be too true. The fault, however, does not lie with *vaccination*, but is to be found in the vaccinators, who perform their work incorrectly and with improper material. Many good things have fallen into disrepute and disuse through the fault of man, and not through any inherent short-coming in the thing itself. Vaccination is a remarkable illustration of this truth.

DOES IT PROTECT ?

PART SECOND.

ARGUMENTS IN FAVOR OF VACCINATION—HOW TO VACCINATE.

“ To vaccinate or not, that is the question !
Whether 'tis better for a man to suffer
The painful pangs and lasting scars of smallpox,
Or to bare arms before the surgeon's lancet,
And, by being vaccinated, end them. Yes !
To feel the tiny point, and say we end
The chance of many a thousand awful scars
That flesh is heir to—'tis a consummation
Devoutly to be wished. Ah ! soft, you, now,
The Vaccinator ! Sir, upon thy rounds
Be my poor arm remembered.”

—*Punch*.

Our humorous friend, *Punch*, concisely puts the question that is to-day agitating medical minds, when he says “ *To vaccinate or not.* ”

We will now see whether vaccination does really afford protection against smallpox. In order to form a correct estimate of the subject, we will select from current medical literature the opinions and experiences relating to the question, and allow you to draw your own deductions from them.

The *British Medical Journal* says: “ The wicked-

ness of encouraging the anti-vaccination agitation could not, it is opportunely pointed out by the *Globe*, be more strikingly proved than by an account it printed of an outbreak of smallpox at Rotherhithe. 'A leading anti-vaccinator, Escott by name, who had none of his children vaccinated, has lost his wife and two children by smallpox, and four others have had the disease. Escott borrowed a suit of mourning from a friend, named Angus, to attend his wife's funeral, and returned the clothes without disinfection, with the result, that the lender caught smallpox and died. Since then, nearly every house in the neighborhood has been attacked, and sixteen patients have been removed to the hospital.' " This is a striking case, but I will give you so many more, that I imagine I will make out a conclusive and convincing case in favor of vaccination.

Dr. E. S. Snow, of Providence, commenting, in the *Medical and Surgical Reporter*, of Philadelphia, on the prevalence of smallpox in our city during 1881 says: "No principle of sanitary science is more positively established than this, that there is an absolutely certain individual preventive of smallpox, which is easily obtainable and easily applied. The

whole question of the arrest of this disease, at any time and in any place, is simply the question of the faithful application of this preventive, with other suitable well-known sanitary measures.'' This individual preventive is none other than vaccination with suitable virus.

Dr. Schuyler reports the careful records of one hundred and ninety-nine cases of smallpox treated by him in the Troy Hospital. Of this number, only seventeen had been vaccinated, and of this seventeen only two died. While of one hundred and five who had not been vaccinated, thirty-three died. He notes that *not a single case, having a recent vaccination, was admitted during his service, and concludes by expressing his belief in the absolute protective power of vaccination.*

I will now produce a strong argument from the home of anti-vaccination. In consequence of the aggressive action of the Belgian Anti-vaccination League, the Belgian Academy of Medicine appointed a committee of three members for the purpose of undertaking an exhaustive examination of the whole subject. At the conclusion of their labors, M. Warlomont summed up the results as follows :—

1. Without vaccination, hygienic measures and means, whether public or private, are powerless in preserving mankind from smallpox.
2. The belief in the danger of vaccinating and re-vaccinating during the presence of a variolous epidemic, is not justified. We can no more cultivate variola by sowing vaccinia, than we can barley by sowing wheat.
3. Vaccination is always an inoffensive operation when practiced with proper care on healthy subjects. It gives rise to fewer and less serious accidents than simple piercing of the ears.
4. It is highly desirable, in the interests of the health and lives of our countrymen, that vaccination should be rendered *compulsory*.

You will notice that this report does not claim that vaccination never does harm, but it is careful to say that "when properly performed, it gives rise to fewer and less serious accidents," etc. No just man will claim that this operation *never* does harm, because sometimes it unquestionably does, but we can claim that the instances in which it is injurious are so infinitely few, compared with the large number in which it does good, that they cannot constitute a valid objection

to its use. Railroads often cause serious accidents, yet they are so clearly to the benefit of the large mass of mankind, that they are encouraged. So, although vaccination may, even when properly performed, very occasionally prove disastrous, yet in such a very large majority of instances does it do good that it ought to be encouraged.

From far-off India comes a most convincing argument, which I quote from a medical journal. "Although the epidemic of smallpox visited the northwestern provinces of India in a fearful manner, causing 58,800 deaths in the single year of 1878, all attempts at introducing vaccination as a protective measure were resisted by the superstitious natives. They looked upon smallpox as a visitation from a Deity, called by them *Sitta*, whose anger had to be appeased with special sacrifices and plagues. The faithful Hindoos considered it an act of impiety to still further incite the wrath of this deity by the administration of unholy medicines or vaccination. In spite of all this, however, vaccination, although under peculiar circumstances, was gradually introduced among the natives. The Thakers, a tribe that

still practices infanticide to a horrible extent, first allowed their female children to be vaccinated, being convinced of its fatal termination, and hoping thereby to get rid of this superfluous progeny. All the sons, however, were carefully guarded against vaccination. Smallpox broke out in four of their villages a short time afterwards, which carried off nearly all the boys, whilst the girls escaped the disease. This unlooked-for termination induced the natives to resort to the opposite practice, compelling the boys to be vaccinated, whilst the girls were left unprotected. Besides this, a large number of cases were observed where children were concealed by their families from the vaccinators; in almost all instances these died, whilst those vaccinated escaped smallpox." Even one such remarkable and unanswerable illustration as this should convince every one of the utility of vaccination, but I have only commenced my arguments, and will continue to give you many more interesting ones.

Dr. Welch, physician-in-charge of the Municipal (smallpox) Hospital of Philadelphia, in the course of an address on vaccination says: "In Sweden, during the pre-vaccinal period, from 1774 to 1801,

the annual average of deaths per million of inhabitants, from smallpox, was 1973 ; after vaccination was introduced, but was not obligatory, 1802-1816, the annual average per million inhabitants was 479 ; and after vaccination was made compulsory, during the period from 1817 to 1879, the annual average of deaths from smallpox per million of inhabitants was only 181. This shows an annual saving of life of 1792 persons out of every million of the population by vaccination, and fully justifies the law making it compulsory."

Statistics collected by Mr. Marson during a service of thirty years in the Smallpox Hospital of London, show that out of 15,000 cases the unvaccinated died at the rate of thirty-five per cent., while among those who had been vaccinated the death rate was only six and one half per cent.

Again, in Dr. Welch's experience of four thousand cases, the unvaccinated died at the rate of sixty per cent., while among those who had been protected by vaccination the death rate was only ten per cent. Still further, he says: " During the last twelve months I have had under my care at the hospital twelve hundred cases of smallpox, and of this number *only*

one had been recently vaccinated, and this case terminated in recovery."

In Germany vaccination is regulated by law, and when a man enters the army he is re-vaccinated. During the Franco-Prussian war, when the German army was double the strength of the French, there were only two hundred and sixty-three deaths from smallpox among the Germans, while among the French (with whom vaccination was not compulsory) the loss from this disease aggregated the enormous total of twenty three thousand three hundred and sixty-eight. A very striking example of the value of re-vaccination is furnished in the *British Medical Journal*. Some years ago, when smallpox was very prevalent, the surgeon of a large sailing vessel discovered, when a few days out at sea, that the captain had secretly conveyed on board the vessel his son, who was suffering from confluent smallpox. The surgeon at once procured all the vaccine lymph that he could, and re-vaccinated as many of the crew as possible. One-third or one-fourth of the crew remained unvaccinated. Of the re-vaccinated *not a single one* caught the disease, while among those who were not vaccinated *all, or all but one or two*, caught the disease, and three died.

Dr. John L. Atlee, of Lancaster, bears testimony to the wonderful power of vaccination in the following statement, conveyed in a letter to his son, Dr. Walter F. Atlee, of this city. He says: "I have tested the efficacy" (of vaccination) "by inoculating for smallpox after vaccination ; have taken patients after vaccination to cases of malignant smallpox in small and hot stove rooms, and exposed them to the foul atmosphere for fifteen or twenty minutes, secure from danger. In one case of a mother, with six unvaccinated children, one at the breast, who had a severe attack of smallpox, as soon as I discovered the nature of the case, I vaccinated all the children and they all took the vaccine disease. The room—it was in February—was a small ten by twelve feet room, with a hot ten-plate stove, and but one bed, on which they all slept, and which was saturated with smallpox contagion ; yet these children picked off the scabs from their mother's body and the baby nursed at her breast, and no one took the smallpox."

Owing to the violent opposition displayed by the anti-vaccinators in London, the National Health Society has issued and distributed twenty thousand

pamphlets, and are sending out more, in which conclusive evidence is furnished of the following points:

1. That vaccination is the only available means of protection against smallpox.
2. That with due care in the performance of the operation, no risk of injurious effects from it need be run.
3. That before its discovery the mortality from smallpox was forty times greater than it is now.
4. That in the London Smallpox Hospital the records show a rate of mortality of less than one per cent. for well vaccinated persons, against a rate of thirty-five per cent. for the unvaccinated.

Sir John Pope Hennessey, Governor of Hong Kong, says that while no port is more liable to the introduction of smallpox, yet it never *spreads* there ; and this blessing he attributes to the fact that the Chinese so firmly believe in and so faithfully practice vaccination. The native doctors of the Tung-wa Hospital not only vaccinate their countrymen in the colony itself, but actually send traveling vaccinators over the adjoining provinces of China, so firm is their belief in its protective power.

The North Carolina Medical Journal for June, 1881,

furnishes a striking illustration of the protective power of vaccination, and although you may consider that I am furnishing too many illustrations, yet I desire to give all the important information I can gather on the subject, in order that the question may be completely and thoroughly put before you. It says: "Few commercial towns for a long time escape visitations of smallpox, notwithstanding that it is the most preventable of all diseases, and smallpox having once made its appearance, is seldom limited to the introduced case.

"An example of complete success in limiting smallpox to the original case (or cases, we should say) came under our observation recently. A vessel from New York, loaded with guano, had a case of smallpox on board. The disease made its appearance at sea, in the person of a son of the captain. The young man was taken into the cabin and nursed there by his brother, who was a mate, and by the steward. Arriving at the Cape Fear quarantine station, the vessel was made to set the signal for the quarantine officer, for the steward, who had acute rheumatism. In the meantime, the case of smallpox was convalescent, and the eruption on the face and

hands was accounted for by the action of the guano fumes. The vessel was permitted to come to Wilmington, and the steward was admitted to the Marine Hospital with rheumatism. The convalescent smallpox patient did not come under the observation of any medical man. For, as the friends of the patient afterwards declared, having passed the quarantine physician at Smithville, they assumed that the case was not smallpox but chickenpox, and consequently the young man attended church and enjoyed unrestricted intercourse. About the tenth day after the admission of the Steward, for rheumatism, he was seized with fever and pain in the back, followed by eruption on the forehead. The Superintendent of Health was notified within an hour after the eruption was noticed, and deciding that it was smallpox, preparation was made for the removal of the patient to the smallpox hospital, four miles below the city. In the ward where the disease made its appearance there were eleven other patients, of Scandinavian and German nationality, except one elderly negro. It is well known that vaccination among the Germans and Norwegians is most thoroughly done, and so the vaccine cicatrices

indicated in these cases. Nevertheless, it was considered necessary to revaccinate all of them with *Animal Virus*, this being designated by the law of the State. All the vaccinations took, with but one exception. In the Seaman's Home, a building connected with the hospital by an entrance-way, there is a boarding house. Every one there was carefully vaccinated. To provide against the risk of an outbreak resulting from the intercourse of the convalescent case of smallpox with his friends on shore, the Superintendent of Health vaccinated unsparingly. The case at the smallpox hospital resulted favorably, and the whole affair terminated *without the occurrence of another case.*"

An editorial in the Chicago *Medical Review* of November 5, 1881, thus bears testimony to the efficacy of vaccination: "It is almost unnecessary to say that cleanliness in person or surroundings has no influence on smallpox infection. The doctrine that cleanliness is more important than vaccination has been expounded by some of the medical lights of this neighborhood. They, however, forget, or never have been acquainted with, the history of modern epidemics. The experience of Andersonville

prison, where something like sixty thousand prisoners were confined in a filth appalling in character and extent, demonstrates this position. Smallpox was twice introduced into that pen, but extensive and thorough vaccination at the date of enlistment prevented the spread of the disease. Not more than a dozen deaths occurred. In modern European armies the same facts have been observed. *In successful vaccination, and in vaccination alone, their safety lies.*"

While this editorial rather belittles the influence which filth exerts indirectly on smallpox production and perpetuation, yet it is, in the main, correct, since no matter how clean and pure a person or locality may be, yet without vaccination, smallpox is more than a possibility; it is indeed a probability. The Louisville *Medical News* of March 19, 1881, tells us that "Dr. Turner Anderson delivered a child while the neck and face of the mother were covered by the eruption of smallpox. He vaccinated it immediately, on both arms. The result was most favorable."

Among other conclusions on this subject arrived at by the Académie de Médecine of France is the

important one, that "without vaccination, hygienic measures (isolation, disinfection, etc.) are of themselves insufficient for preservation from smallpox."

From another source I learn the astounding but satisfactory and comforting fact that Dr. Buchanan, the medical officer of the London Government Board, has issued his statistics, which show that the smallpox death rate among adult persons vaccinated is ninety to a million ; whereas among those unvaccinated it is 3350 to a million. Among vaccinated children under five years of age forty and one-half per million ; whereas among unvaccinated children of the same age it is 5950 per million.

The lower classes in the Island of Madeira are exceedingly hostile to the practice of vaccination, and the *Pacific Medical and Surgical Journal* tells us that six years ago smallpox prevailed there and carried off one thousand persons out of a population of one hundred and thirty thousand.

Macaulay thus graphically describes the ravages of this disease, at the close of the seventeenth century : "The smallpox was always present, filling the churchyards with corpses, leaving on those whose lives it spared the hideous traces of its power,

turning the babe into a changeling at which the mother shuddered, and making the eyes and cheeks of the betrothed maiden objects of horror to the lover." How vaccination has changed this picture every one knows full well.

Still, the *Public Ledger* recently said, editorially, "The world is getting on pretty near the close of the nineteenth century, and yet it appears to be necessary for skilled physicians and sanitarians to make formal argument before a committee of our city Councils to convince Councils that vaccination is a safeguard against the fatal ravages of smallpox! A hundred years of accumulated experience seems to have gone for nothing."

One of the foremost physicians of America, Dr. N. S. Davis, of Chicago, believes that an immediate re-vaccination is the surest test of a successful vaccination, since if it does not take the second time it is sufficient proof that the first has been successful, and he considers that if this precaution were observed "*not one in a million would take smallpox.*" He adds that if compulsory re-vaccination were enforced it would stamp out the disease.

Have I not adduced sufficient evidence to con-

clusively prove that when properly and successfully performed vaccination does afford immunity from smallpox ? If I have, how, then, can any one have the hardihood to deny himself this immense protection, to be procured from so trivial an operation.

Is it that we do not thoroughly realize the dangers and the horrors of the disease, or is it that we are careless about means of preserving our health until that valuable health becomes impaired ? I am inclined to think that both of these elements conspire to produce the comparative apathy existing among the public in connection with this protective operation. The general mass of the people see so little of the ravages of the disease, unless it happens to enter their own household, that they do not realize its horrors. They are so little acquainted with the infinite number of avenues of contagion that they do not fear, half as much as they ought to, that they may themselves take the disease, and until it is brought very near home to them they fail to avail themselves of the immunity which vaccination confers.

I will relate three instances, which, kept before

your minds, will assist you to realize the horrors and the dangers of the disease.

1. A man in Jersey City recently died of smallpox. When the Health Officer went to examine the house he found the widow lying on a bundle of rags on the floor, and she, too, was dying from the same disease. On her right hand lay a boy of seven, dead, while on her left was the dead body of a girl of five. In the corner were two more children sick with smallpox. Can you conceive a more horrible sight? None of this family had been vaccinated. Now, contrast this case with that alluded to as reported by Dr. Atlee, in which six successfully vaccinated children slept in the same bed with their mother, when she was suffering from confluent smallpox, and none of them ever took the disease. This illustrates the *horrors* of smallpox. The next cases will illustrate its contagion.

2. Two ladies in Philadelphia kept a boarding house; one of them was taken sick with smallpox; she died. Ten days subsequently the servant who nursed her was taken sick and died.

3. Recently, at the town of Gratz, near Harrisburg, a prominent citizen died of smallpox; the nature of

the malady having been kept secret, the funeral was largely attended ; in a few days three children were taken with the disease, and in a very short time seventeen of those who attended the funeral were down with the disease and new cases were being reported.

Of all diseases, smallpox is, probably, the most violently contagious, and, unlike other terrible diseases, it is not content with killing many persons and destroying many happy homes, but upon those whose lives it spares it forever leaves its ineffacable warning to others ; a warning that speaks louder than words, a caution so strong that it ought to do more in favor of vaccination than the greatest eloquence of the most wonderful orators, or the written accumulations of the most facile and convincing pens.

It would really seem as though men valued their live stock at a higher rate than they do their own flesh and blood. Recently M. Pasteur, a distinguished scientist, has discovered a method of vaccination by which sheep, hogs, horses and other live stock can be given immunity against a very fatal disease that is oftentimes very prevalent among them. When his

discovery was made known, farmers from all about came flocking to him in large numbers, to have their animals vaccinated, so that in a short time more than fifty thousand were thus given protection in the suburbs and near vicinity of Paris alone.

And yet, these very men, who feared lest they might lose some money by the death of their sheep, and who so hastily and greedily availed themselves of protective vaccination for their stock, are evidently so careless about the welfare of their human stock, of their own children, that in this very country, where such a prodigious number of the lower animals have been protected, it has been found necessary to compel human vaccination by legislative enactments.

What a commentary on human nature, when a civilized and enlightened nation like France, though verbally denying the indictment, yet by action admits that to them, money, and live stock, as representing money, are of more value, are in reality nearer and dearer to their hearts, than their own offspring.

Does it not seem almost incredible and beyond the possibility of belief, that in this enlightened age of mental and material progress it should become neces-

sary to *compel* persons to avail themselves of the protection which my arguments must tend to show vaccination does confer. I doubt not that if you were to ask any man if he would not consider it a great blessing if some means could be devised by which smallpox could be eradicated, he would answer, *indeed I do*, most emphatically, and without the slightest hesitation. Yet, when such a means has been devised, does exist and is to be so easily procured, they keep putting off until it is too late.

I feel confident that if the most devout and persistent anti-vaccinator in the world were laid up on his back with a virulent case of confluent smallpox, if he told the truth, he would cry out, from the very innermost recesses of his soul, his regret for having neglected the protection he could so easily have procured. You all know the old saying, "*When the devil was sick, etc.*" This is applicable to the anti-vaccinators in a marked degree.

While they have some arguments for their side, (which I will fairly present) yet I cannot bring myself to believe that any one of them, who is sincere, really does not believe in the protective power of vaccination. If they would confine their agitation

to the endeavor to reform the evils of the present system of vaccination, they would receive the hearty support and co-operation of the respectable medical profession and of every honest, thinking man. But when they endeavor to create an absolute disbelief in this protective power, or when they endeavor to maintain that vaccination does more harm than good, they assume the relation that Don Quixote once held to a windmill; they are battering against an impregnable barrier in their endeavor to reach their goal; they are fighting an invulnerable and invincible foe, since they will ever find arrayed between them and the consummation of their iconoclastic campaign a solid and impassable phalanx, composed of nearly the universal medical profession of the world, supported by the mass of intelligent, thinking laymen, who will keep vaccination alive and afloat till this storm of prejudice and misrepresentation shall have expended its fury, when they will guide it into port, to be welcomed once again by the hosannahs and the hallelujahs of a grateful and eager world.

I doubt not that some persons may say that they thought that vaccination was very universally re-

sorted to, and that they do not understand why I should take such a position.

A few words will disabuse them of this erroneous idea, and may perhaps enlist their co-operation in making it universal. It is true that the anti-vaccination storm has not yet reached our country in its full force, but its advance agents are already among us, and unless we show them by a very determined stand that such ideas are obnoxious and will not be entertained, we will soon have the anti-vaccination agitation in full force among us.

The present epidemic of smallpox, taken in connection with the arguments adduced in favor of the protective power of vaccination, is one proof that it is not universally resorted to, else, if it were, we would not have this epidemic.

Still more, I recently received a pamphlet, written by a physician, in which he endeavors to show that vaccination not only does not afford protection from smallpox, but he even goes so far as to say that this operation is productive of more evil even than smallpox itself. This is one of the forerunners of the anti-vaccination storm. Some of his arguments are good as far as they go, but they do not go far enough. He and those who agree with him fall into

the error of universally condemning an entirety, without looking into and endeavoring to correct the faulty particulars that make this entirety seem dangerous. Some of his objections will be noted and explained away in the next part of this book.

It will seem strange, no doubt, to many of my readers who already firmly believe in vaccination, that so much skepticism should exist concerning it ; but the fact is that such doubt does obtain, and we might as well stare it in the face, admit its existence and endeavor to stifle it in its infancy. How to do this I will suggest further on.

A few words on how to vaccinate will now be in order, but only a very few, since, entering upon this question, I am encroaching upon the territory of the physician, which I have neither the right nor the inclination to do in a popular treatise.

The essential principle of the vaccine virus gains entrance to the system in the operation by being absorbed from the abraded surface of the skin. Grossly speaking, the skin consists of two layers. In the operation for vaccination the outer layer is scraped off, leaving exposed a raw surface or space on the lower layer or true skin, which possesses the power of absorption. The vaccine

material mixed with water is then placed on this raw surface, from which it is absorbed into the system. It matters not how this abrasion is secured, the point being to remove the outer skin. It is not necessary to bring blood, indeed, it would be better not, since it is possible that the blood may clot on the surface and offer a mechanical impediment to the absorption of the vaccine matter, though this latter is not likely. But to repeat and impress on you, the essential consideration in the operation is to secure the removal of the outer skin.

It matters not what portion of the body is selected for the operation ; one is as good as another, so far as the efficacy is concerned. The left arm above the elbow is usually selected, but simply as a matter of convenience, since that portion can be more easily given the rest and quiet so essential to an inflamed and sore spot.

It must be remembered that a successful vaccination will sometimes produce very marked constitutional symptoms, and will oftentimes make a person so sick as to compel him to go to bed. It will also produce a very painful local sore, with much inflammation, that will require absolute rest of the part and the application of soothing lotions. Some parts of

the body can, of course, be more readily placed at rest than others, hence they should be chosen, since a disregard of this precept may give rise, in some cases, to very troublesome and painful complications. A prominent operatic singer was recently vaccinated in the West. She objected to having the operation performed on her arm, on account of the disfigurement which the subsequent scar would entail ; the thigh was decided upon and the operation was there performed. She was cautioned to be very careful of the limb and to exercise it as little as possible. The vaccination took. For some days the lady was very careful ; but one night, receiving an enthusiastic reception from a very large audience, she was carried away, and forgetting her caution, endeavored to act her best, with the result that she was laid up in bed for two days with a very sore limb.

Therefore I would advise all to follow these few simple directions. Select that portion of the body which you are sure you can keep most at rest, and when the vaccination commences to take, if the arm or part is very sore, keep applied to it a rag smeared with some greasy substance ; you may use for this purpose cosmoline, vaseline or even plain lard, which will do as well as anything.

It will be well, before concluding these remarks in favor of vaccination, to summarize the points we have given, so that you may, if you so desire, commit the digest of them to memory, and have ever ready, at your tongue's end, the conclusions of the majority of physicians, with which you may answer the arguments of anti-vaccinators, or confirm the wavering of any friends who may have a tendency to take up with their views. These, then, are the conclusions of the advocates of vaccination. That in the large majority of cases, when successfully performed with proper virus, it does afford protection from smallpox. That in those few cases, comparatively speaking, in which it does not afford absolute immunity, it so modifies the intensity of the disease that it rarely proves fatal. That *pure* bovine virus is to be preferred to that from the human subject, since it absolutely prevents the passage of extraneous diseases from one to another. That the proportion of cases in which this operation proves a benefit is so greatly in excess of those in which it is injurious, that it becomes, not only justifiable, but greatly to be desired.

PART THIRD.

ARGUMENTS AGAINST VACCINATION.

After presenting such overwhelmingly strong arguments in its favor, it will now be in order to ask, why does any one attempt to cast disrepute and obloquy upon such a self-evident benefit to mankind, and upon what ground can anti-vaccinators stand?

They have, indeed, very strong arguments, and so far as they go, very sensible ones; but, as I have already intimated, the validity of their objections can be upheld only when they condemn the usual methods of vaccinating, and are valueless when they attack the protective power of properly performed vaccination. The platform upon which anti-vaccinators stand has, in reality, only two props or supports, and I hope to be able to demolish them and drop the platform, with its occupants, into a belief in vaccination. These two points are—

1. The fact that, in some instances, vaccination does not confer immunity from smallpox.
2. That various diseases can be transmitted from

unhealthy persons, through the medium of vaccination, to those previously healthy.

These two objections undoubtedly do exist, and are strong points as far as they go ; but when viewed impartially, and in connection with the favorable evidence I have furnished, they only tend to prove that the fault lies not with vaccination itself, but with the vaccinator.

We will take them up in turn and see the correctness of this proposition.

i. Undoubtedly, vaccination does, in many cases, fail to afford immunity from smallpox ; for two reasons.

(a) There is no universal rule in nature. There is no law without its exception. Every sensible man knows, realizes and daily experiences this fact. Neither Jenner nor his most ardent disciples ever claimed that vaccination would, in *every* case, protect from smallpox. There must and ever will be exceptions to this, as to every other natural law. But they do claim, and experience substantiates this claim, that in the vast majority of cases, when properly performed, with good material, and it is successful, it does afford protection.

(b) Great carelessness and even criminal fraud exists, to an inexcusable extent, in the production and selection of vaccine virus, and in the performance of the operation.

The story is told of a physician, who, when visited in his office by a stranger, to be vaccinated, not having any virus on hand, and fearing to lose his fee, mixed up some gum arabic, and vaccinated his unsuspecting victim with it, telling him that if it did not take in a week, to return, and he would do it over again. No doubt similar cases have repeatedly occurred, and since, in some persons, the mere scratch-ing of the arm might make a *sore* with a subsequent *scab*, and since the general public does not know how to recognize a successful vaccination, believing that a mere *sore arm* is sufficient proof that it has *taken*, they consider themselves protected, do not return to the doctor, and subsequently taking small-pox, another case is added to the list of unsuccessful vaccinations.

This same insufficiency in the protective power of the material used, from various causes, unnecessary to mention here, has tended to cast distrust upon vaccination, when the fault really lies with the physician.

It is unnecessary, and would be tiresome, to here detail the numerous reasons why some virus possesses no protective power. Suffice it to say that such is an unquestioned fact, and to suggest a remedy, which I will do further on.

2d. That various diseases have been and can be transmitted from one to another, through the medium of the vaccine virus, is a pretty generally accepted proposition. But here again the fault lies with the material and the carelessness or criminality in its propagation and supply, and not with the operation itself.

When a *conscientious* physician desires to procure a supply of vaccine virus, he goes to some druggist, *in whom he has confidence*, and buys some ivory points coated with bovine virus, or he procures from some brother physician (also conscientious) a scab taken from a child who was believed by this doctor to be perfectly healthy. In many instances, indeed in nearly all, the material thus procured will be pure and efficient, will confer immunity from small-pox, and will not contain the seeds of any foreign disease. But it is impossible for the most careful druggist to avoid occasionally receiving some impure

points. The desire for money and to make it easily, to derive unnaturally large profits from all business operations, is so inherent in human nature, that adulteration, in order that expense may be lessened and profit increased, has even entered into the business of supplying vaccine virus.

In order not to be too personal I will make no mention of locality or names in the story I am now going to tell, but will assure you that it is true.

I have been informed by reliable authority that a physician of this city is in the habit of collecting all the scabs from vaccinated persons that he can get and forwarding them to a neighboring city, near which are several vaccine farms. Of course, I do not know what is there done with them, but it would not require a very great stretch of the imagination to suppose that they are mixed with water, and ivory points, coated with the mixture, dried and shipped over the country as "*genuine bovine virus direct from the cow.*" Still worse, I have been informed on good authority that an extensive and generally-considered reliable drug firm in this city buy scabs directly from physicians, and in their own establishment mix them with water, coat ivory points

with the mixture, and sell the same to unsuspecting physicians (upon whom they fawn and into whose good graces they insinuate themselves, by a miserable, cringing sycophancy) as *pure bovine virus, direct from the vaccine farm*. This firm, by a number of years of plausible catering to physicians, have worked into their confidence and built up an extensive trade, so that any material coming from their store is generally considered irreproachable.

Is it any wonder, when such outrageous practices are resorted to, that vaccination meets with opposition. It is enough to make the blood of an honest man fairly boil with indignation when he hears that a firm making more than fifty thousand dollars a year will resort to such a contemptible device to add a few dollars to their profits. Neither is it a harmless device, since, as we will see further on, this firm and such other mean, contemptible puppies as they are, may be the means of spreading abroad the most loathsome diseases among their unsuspecting fellow citizens. We will be charitable enough to trust that they do not realize the true nature of their nefarious traffic, else how could they sleep of nights.

Again, it is a fact, that many persons contain in

their systems the seeds of some disease, when to all outward appearances they are perfectly healthy. A scab derived from such a person, and honestly believed to be perfectly harmless and efficient, may, unfortunately, in the person vaccinated with it, develop some terrible disease.

Again, in the medical profession, as in every other calling, the majority of men are not hampered with any too much conscience. They want to make money, and are not overly particular how they get it ; the end, in their imagination, justifies the means. Hence, any scab or any virus is good enough for them. They are not very particular as to its purity or efficiency. In this way, no doubt, much misery is caused and very much undeserved censure and condemnation is heaped upon vaccination.

Here, then, we have concisely and illustratively stated the two arguments upon which anti-vaccinators base their case. To sum up: The facts that, in some cases, because of carelessness in selection of material, vaccination fails to confer protection, and in other cases produces disease nearly or quite as bad as smallpox itself.

These two arguments, as far as they go, we must

and do cheerfully concede to the anti-vaccinators. But they are very weak, and prove nothing for their case. The fact is sufficiently answered by the admission made, that no law is so absolute and universal as to be without an exception—unless, may be, as is popularly said, in the cases of taxes and death, and we might add the law that a note will be protested if you fail to pay it. The second argument constitutes one of the *abuses* of vaccination, and has no weight to prove anything more than the corrupt and mercenary nature of that portion of mankind who are depraved enough to resort to such base and villainous practices.

The fact that the instances in which vaccination fails to afford protection are the exceptions, has been sufficiently demonstrated by the arguments already adduced.

Therefore, at the risk of repetition, we must regard the arguments of those who oppose vaccination as being based upon wrong premises, since they use the exceptional cases and the abuses of the practice to point their arguments.

One other argument, which probably ought to be mentioned, upon which our opponents base their case,

is that vaccination is prone to produce erysipelas. In answer, we might admit that erysipelas is produced in every successful vaccination. The disease means an inflammation of what we call connective tissue, that is, the tissue beneath the skin. Now, since successful vaccination does produce a violent inflammation of the skin about the seat of the operation, it is but fair to infer that this inflammation may extend to the tissue beneath and produce a local inflammation of it, or a localized erysipelas, which is trivial and perfectly harmless. As for its ever producing a genuine and dangerous attack of the disease, I can quote the statement of a New York physician, who had vaccinated two thousand persons and had never seen a resultant attack of erysipelas ; and can also say that, after a careful examination of all the medical literature of the past year, I have found but one reported case of erysipelas following vaccination, and in this single instance the disease could not be clearly traced to the operation, since other causes for its development existed.

Here, then, I have concisely, honestly, and conscientiously, stated the arguments advanced by anti-vaccinators, and have endeavored to refute them. I

have carefully scanned all the most recent literature, and these have been the only arguments worthy of notice that I could find.

Since there are strong objections, and since they do qualify and modify the benefits to be expected, and that can be derived from vaccination, we will go on to our next subject and endeavor to suggest a means by which these defects may be remedied, and the full, free, and unalloyed protection that vaccination is capable of conferring be vouchsafed to all.

PART FOURTH.

HOW TO OVERCOME THESE OBJECTIONS.

It seems conclusively established that were vaccination and revaccination to become absolutely universal, smallpox could in time be exterminated. This is truly a consummation most devoutly to be wished for. But how can it be brought about? Only in one way, namely, by *legislation*.

I will suggest a form of legislation, which, if carried into effect, would demolish the platform of anti-vaccinators, and would, beyond doubt, if persevered in, eventually eradicate smallpox. And this suggestion I will make in the form of some points or hints for a bill to be presented to, and acted upon, by the legislatures of our various States.

I would suggest the establishment of a "State Board of Vaccination," who should be given the authority to compel, under penalty of fine and imprisonment, the vaccination of every man, woman and child, in the State. The members of this Board should be elected for life, or good behavior, by the

State Medical Society, and any vacancies that might occur by resignation, death or removal, be filled by the same Society in annual session. By this method of organizing the Board, the damning influence of politics would be kept as remote as possible from the groundwork of our plan. An annual appropriation should be made, sufficiently large to enable this Board to thoroughly carry on its good work.

This Board should commence its work by the establishment of a State vaccine farm ; the Superintendent of which should be a physician, and be elected by the Board. The State should be divided into vaccine districts, and an inspector appointed for each, whose duty it should be to constantly watch over the persons in his district, and to report all who had not been vaccinated within the prescribed time to the vaccine physician, who should forthwith cause a notice to be served on such person to call at his office *at once*, and be vaccinated. A vaccine physician for each district should be elected by the State Board, whose duty it should be to vaccinate every man, woman and child, in his district. These physicians should be supplied with virus direct from the State farm, free of cost, under the following

conditions: Once a week, they should each make requisition upon the Superintendent of the farm for as many points as they may require, and should at this time return all unused points in their possession. Each lot of points sent out should have a distinctive mark on each point, and a careful record kept of the destination of each lot, as well as the source from which the virus has been derived. When a person is vaccinated, the point used should be given to him with its distinctive mark. Thus, if any accidents occurred, if any disease was communicated by vaccination, it would be a very simple matter to place the responsibility, through the physician using the virus which has proved disastrous, to the Superintendent of the farm, and if negligence or carelessness on his part could be substantiated, he should be severely punished, besides being removed from office. It should be made a penitentiary offence for any physician, other than the duly elected and authorized vaccine physician of the district, to perform vaccination. No charge should be made for his services. The vaccine physician should be required to keep careful and complete records of all cases vaccinated, and should make monthly reports to the superintendent of the farm,

who should in turn make an annual statistical report to the State Board.

It should be made compulsory for every man, woman and child to be vaccinated every five years. When vaccinated, each person should receive a card like the following:—

This certifies that JOHN BLANK has been vaccinated by me, on February 1st, 1882. JAMES BROWN, M. D.,

Vaccine Physician,

1st Vaccine District, State of Pennsylvania.

FEBRUARY 8, 1882.—JOHN BLANK has been seen by me, and his vaccination, performed February 1st, 1882, has been successful.

JAMES BROWN, M. D.,

Vaccine Physician,

1st Vaccine District, State of Pennsylvania.

The District Inspectors should be allowed the authority to inspect this card at any time, and any person not possessing one should be compelled to call on the district physician and be vaccinated. It should be made an offence as great as counterfeiting United States bank notes for any one to fraudulently print one of these cards, and as criminal as forgery for him to write himself, or get any one else to write, the name of the duly authorized vaccine physician to it. As much care should be exercised

in the prevention of counterfeiting these cards as is used to prevent the counterfeiting of money.

It should be compulsory on all to be vaccinated every five years, and a severe penalty should be visited upon all who neglected this provision.

This system of vaccination, when once fairly inaugurated, would work smoothly, and ought not to meet with any opposition. The intelligent classes would have no reason to object to it, since they would have the assurance that they were being vaccinated with pure virus and by competent physicians, while such opposition as might be encountered from the ignorant ought to be neutralized by the strong arm of the law, since, when people are so foolish as to object to that which would be undoubtedly for their good, then indeed does it become necessary to force these foolish people to take care of themselves.

In addition to these measures by the different State governments the National Government would have to do something. I would suggest that Congress empower the National Board of Health to appoint a vaccine physician for every Port of entry, whose imperative duty it would be to vaccinate every

emigrant arriving in the country and every native returning from a foreign trip, unless he could produce evidence (in the shape of the vaccine card already referred to) that he had been vaccinated successfully within five years. A card, similar to the one referred to, should be furnished to each emigrant, and it should be a part of the police duty of every city and town to note the arrival of every new person, to notify the vaccine inspectors of such arrival, and they in turn should take the precaution to ascertain whether or not the new arrival had been successfully vaccinated, and so report to the vaccine physician.

All these officers should be liberally paid, and no charge should be made for vaccination, so that no one could have the excuse "of want of means" to offer in extenuation of non-compliance with the law.

Such is, in a crude form, the only method by which smallpox can be eradicated. It really means *universal vaccination*, and by this universality, and by it alone, can this disease be stamped out of existence, and by it, if faithfully and persistently carried out, can this disease be rendered a thing of the past.

Does it not seem strange and almost incredible that human nature can be so blind to its own interests as to neglect securing the wonderful immunity from a terrible disease that is conferred by so trivial an operation? Still, it is true that many persons do neglect to be vaccinated, and since they are so careless, it becomes the paramount duty of our law-makers to force them to protect themselves.

Let me urge all classes to seriously consider and act on these suggestions. Let me beg you all to invoke the mighty power of legislation to drive from the haunts of men forever this ghastly spectre that makes desolate so many homes and ruins so many faces.

I will ask the father as he gazes on his innocent and beautiful children, the young man admiring his sweetheart's beautiful skin, the wife her husband's manly beauty, and the brother who takes pride in his sister's comeliness, to agitate this question. Go and see your representatives in the legislature ; it is your votes that send them there ; they must do as you desire, else you can send some others who *will* do your bidding in their places ; insist with them that they must so legislate that you and your neighbors

can be protected from this terrible disease, when protection is so easily attainable.

Do not rest satisfied until you have accomplished this purpose. As surely as the sun rises, smallpox can be exterminated, but it can only be done by universal vaccination with pure material.

When the Almighty has allowed the mind of man to furnish to us such a wonderful and yet such a simple means of preserving health and beauty, does it not seem terribly negligent in us that we do not all avail ourselves of it.

Let us hope that the day is not far distant when from the legislative halls of every commonwealth in this great country shall go forth the glad tidings, "*vaccination is compulsory.*" Then can we confidently trust that the medical historians of the future will refer to smallpox as one of the ancient and extinct diseases, as we of to-day are wont to speak of leprosy, and then can we hope that the one disease will be as rarely met with as the other.

PART FIFTH.

HYGIENE OF SMALLPOX.

Under this heading I propose to give a few hints concerning the means of prevention (besides vaccination) as well as the hygienic treatment of one sick with the disease, and the best means of controlling and preventing its spread. The subject will be divided into two parts. The first will give some hints as to what might be called public hygiene, or the duties that devolve upon city and state officials, while the second will sketch the part that the individual must take in preventing the spread of smallpox.

1. *Public hygiene.* The *College and Clinical Record* of August 15, 1881, contained an editorial from which I will make some selections as pertinent to the subject under consideration. It says: "Should any of our readers or correspondents be in need of a good illustration of the way in which a large, wealthy and comparatively enlightened community, in a position, as regards social and material advantages other than sanitary, second to none in this country,

can mismanage an epidemic of smallpox, we invite their attention to the history of the present epidemic in Philadelphia, which, commencing in 1879, still drags its length along, with every prospect, during the coming fall and winter, of being as virulent as at any time in the history of the city." This prediction we all know has been verified. "Not a month has passed for nearly two years without furnishing its quota of cases, with a large aggregate of deaths. No one doubts that smallpox is a preventable disease, and that epidemics cease under proper sanitary precautions. Some of the causes of a want of efficient management of the epidemic have been, first, the want of sufficient appropriations for the purpose; second, the want of a proper sanitary organization, clothed with necessary power, and finally, a want of moral support from the community, who have been kept in ignorance of the true condition of affairs, by the secular press, lest the publication of the facts might cause the mercantile interests of the city to suffer. Free vaccination is very good, when actively carried on, and proper precautions are taken to insure the use of true vaccine virus. But vaccination is not all. Systematic and rigorous isolation of all

cases of smallpox, as well as convalescents and attendants upon the sick until they are free from infection. Under the present administration of affairs smallpox patients, with the eruption still out upon them, are to be met with at public dispensaries, in doctors' offices, in stores, in public schools, in the street cars; in short, anywhere where people congregate. Even the visitors to the Smallpox Hospital go and return in the public conveyances. Not long ago a smallpox bed was deposited on a vacant lot down town, in front of a row of new and clean dwellings; no less than twenty-five cases of smallpox occurred in the local outbreak which followed. In New York a corps of physicians has been organized for systematic house to house visitation, prompt isolation of the sick, disinfection of premises and the reporting of sanitary defects in dwelling houses." These are all just accusations and crying shames. If, as the Board of Health claims, they are prevented from carrying out proper sanitary measures, by the refusal of Councils to appropriate sufficient money, the people have it in their power to force them to do so, by refusing to send to Councils any representatives until they have clearly and thor-

oughly pledged themselves to support liberally all measures looking to the public health.

Again, the Public Health Organization of Philadelphia at least, and of any other cities where it is similarly organized, is faulty. The Health Officer, whose supposed duty it is to carry out the directions of the Board of Health, is entirely independent of them, being a politician, appointed to office by the Governor. He may do what the Board tells him or he may not, as he pleases, and they can do nothing with him. A recent striking illustration of the faulty organization of our Health Department will be interesting. A prominent physician was called on a Friday evening, to a sick lady. On Sunday smallpox was developed. As the Health Office was closed, it was the obvious duty which this physician owed to society, to visit the Health Officer at his residence and report the case. Instead of doing so, he claims that he sent him an informal notice by *mail*, which could not have been delivered until Monday morning. In the absence of the physician the Health Board passed a vote of censure and fined him the paltry sum of fifty dollars. The doctor, learning of this action, asked for a hearing, which

was granted. He then, in addition to what has been already said, stated that on Sunday morning he received, by mail, a formal blank, to be filled in; he filled it in and returned it by mail, and it reached the Health Office Wednesday morning, *three days after the nature of the disease had become known to him.* The, Health Officer was asked whether he had received the communication of Sunday night, when he nonchalantly replied that he did not recollect. Whereupon the Board remitted the fine, but retained the vote of censure, and the culpable doctor departed, happy. In the meantime the patient died, and her *dead and poisonous body was allowed to remain in a room in a crowded boarding house for three days.* This in the enlightened city of Philadelphia, with a Board of Health counting several prominent physicians among its members. Such carelessness on the part of physicians and health authorities, when viewed in the light of probable evil it entails, is most censurable, if not criminal, and ought not to be tolerated. If Councils cannot be forced to appropriate enough money to prevent the ravages of a disease that we know how to control, surely there are enough rich and public-spirited citizens, who annually give

away large sums of money, who, by uniting, could give, and hardly miss, more than enough to stay the worst epidemic of smallpox.

The public duty in this matter of prevention can be summed up under three heads: Universal vaccination, complete isolation, and thorough disinfection. It will be unnecessary to discuss these points in detail, since, if the requisite amount of money is forthcoming, there are many gentlemen thoroughly conversant with the subject and amply competent to satisfactorily carry them into effect.

I have heard it said that "smallpox attacks the poorer classes, and that the rich care but little about vaccination and have but little fear of the disease." If this is so, it is a most fatal error. Smallpox makes no distinction; it would as soon enter the palace of the King as the house of the pauper. In support of the belief that the rich are careless about protecting themselves from smallpox, and to demonstrate that they are suffering from this carelessness, the conclusions derived from an elaborate statistical table which I have compiled from our Health Reports will be of value.

On one hand I have selected the three most arist-

cratic wards of our city, into which, owing to the presumed intelligence of the inhabitants, the health authorities but rarely penetrate, leaving preventive measures, in a large degree, to the individual action of the citizens. On the other hand will be found the three plebeian wards, into which, owing to their crowded condition, and the filth, carelessness and disregard of sanitary laws of the inhabitants, the chief energies of the Health Board are expended. What do we find?

In 1861 the three aristocratic wards contributed only two and a half per cent. to the total deaths from smallpox. While during six subsequent years, during which I made my investigations, they contributed more than four per cent., a loss of over one and one-half per cent.

In 1861 the three plebeian wards contributed twenty-seven per cent. of the total deaths, while during the six subsequent years their proportion was only fourteen per cent., a clear gain of thirteen per cent., which, added to the loss in the aristocratic wards would give a comparative gain of over fourteen and one-half per cent. in favor of the plebeians.

This clearly demonstrates that it will not do to

trust to individual efforts. It shows plainly the efficacy of well-directed public efforts, and it forces us to conclude that the rich as well as the poor must be subjected to them, if we would hope to eradicate smallpox.

So much, then, for public hygiene.

2. *Private or personal hygiene.* The same cardinal points are here to be observed. Vaccination, isolation and disinfection.

Vaccination has been already sufficiently discussed. Isolation and disinfection now claim our attention. The ignorant classes must be isolated by law, since argument and persuasion have very little influence on them. There are two classes of intelligent persons to whom some advice concerning this question ought to be addressed. The first class consists of those who are keeping house, and the second of those who are boarding. When a case of smallpox occurs among the first class, if it is desired that the patient shall remain at home, the physician in charge should notify the Health Officer, who ought to send an inspector to examine into the conditions and surroundings of the patient, and to decide whether or not it would be dangerous to others to

allow the sufferer to remain where he is. If he decides in the affirmative, then all members of the family should be vaccinated and sent away, save, perhaps, one, who may insist, even after being acquainted with the peril of doing so, on remaining to nurse the sick one, as in the case of husband and wife or mother and child. The patient should be removed to an upper room, and absolutely no one should have access to him or her, save the physician and nurse. Every article that is removed from the room should be disinfected beforehand. Sheets should be hung in the door and window ways, which should be kept constantly saturated with some disinfecting solution, the nature of which I will leave to the intelligent physician, since there are so many to choose from. Thus would be reduced to the minimum the danger of any of the poisonous emanations being wafted by the wind to other portions of the house or to the outside world. It would be well to keep the air of the room constantly saturated with disinfectant vapors, which can be accomplished with the aid of a small portable steam atomizer. All clothing removed from the patient or the bed should be thoroughly washed in a disinfecting solution before being removed from the

room, while any scabs that may fall from the body should be immediately placed in the same liquid. Absolutely no intercourse should be had by the nurse with the outside world, until the physician has declared all danger of contagion to have passed.

When this period has arrived, and before any of the family are allowed to return, the sick room must be thoroughly disinfected, and for this purpose you should employ only persons who have been thoroughly protected from smallpox by a recent attack of the disease, or by a recent successful vaccination. The floor should be scrubbed, over and over again, with the strongest possible disinfectant solution. The paper should be torn from the walls, and they should be washed, as the floor, and repapered. The wood-work should all be repainted ; and in the case of very rich persons, this process should be extended to the whole house. *Every article, including even the bedstead, should be burned* ; indeed, were it possible, it would be the safest course to burn the whole house, and I am almost tempted to say, to cremate the patient himself. In this holocaust must be included all wearing apparel used by the nurse.

The second class, those who live in boarding-houses

or hotels, can be settled in a few words. They should be at once removed, either to some private house, whose inmates are willing to have them, subject to the terms and conditions already laid down for private houses, or they should be taken to the Smallpox Hospital. They have no right to remain in a house full of people who do not care for them, and to endanger the lives of their fellow-boarders. If they do not, of themselves, realize this, they must be made to do so.

They need not fear the Municipal Hospital. It should be so ruled that they would there be allowed the nurse and doctor of their own choosing, and when they once have the disease, their chances of recovery will not be lessened by removal to the Smallpox Hospital (providing they are allowed their own nurse and doctor), while the danger of infecting others will be very much reduced.

The necessity for this very great caution will be understood, when you learn that the scabs from a convalescing smallpox patient may retain their contagious or infectious powers for a long time.

Some years ago, a patient recovering from an attack of smallpox wrote a letter to a friend in a city

three hundred and fifty miles distant. When leaning over the paper, writing, a small piece of scab from his face fell, unnoticed on the paper ; the letter was folded, sealed, directed and forwarded. When received, the friend noticed this spec in one of the folds of the letter, but supposing it to be merely some dirt or imperfection in the paper, or perhaps not considering it at all, put the letter in his pocket with this scab still in it. Result : in a short time this man was taken with smallpox and died, and his death was followed by a local epidemic of the disease.

Does not this one case, which is a true one, drawn from life and not imaginative, sufficiently demonstrate the property which smallpox scabs may possess and retain for a long time, of transmitting the disease to great distances, and may it not serve to explain the sometimes apparently mysterious origin of an outbreak where no case of the disease has previously existed ?

I have now reviewed the question of vaccination as comprehensively as is possible in so small a book. The main points in each question involved have been concisely stated, the arguments for and against vaccination have been impartially and fairly stated ; and

the decision of the question has been left to the judgment of the intelligent portion of my readers.

I commenced the study of this subject as a believer in vaccination, and I have concluded it a much firmer believer than before.

I fully recognize and admit the dangers that may arise from the abuses of vaccination, but I find sufficient evidence to convince me that these abuses can be remedied.

From the evidence, I have been led to conclude that smallpox can be entirely eradicated by the universal and faithful practice of the three requirements, VACCINATION—ISOLATION—DISINFECTION.

Should my suggestions in this brochure meet with favor I will at some future time furnish conclusive and unquestioned proof that the money necessary to procure these desired conditions would be a most excellent national or state investment, since the increase in the national wealth from the number of lives saved by them would be so enormous that the expense incurred would be but as a drop in the bucket.

In the meantime, I will be very glad to hear from my readers any undoubted instances either favorable or opposed to vaccination.

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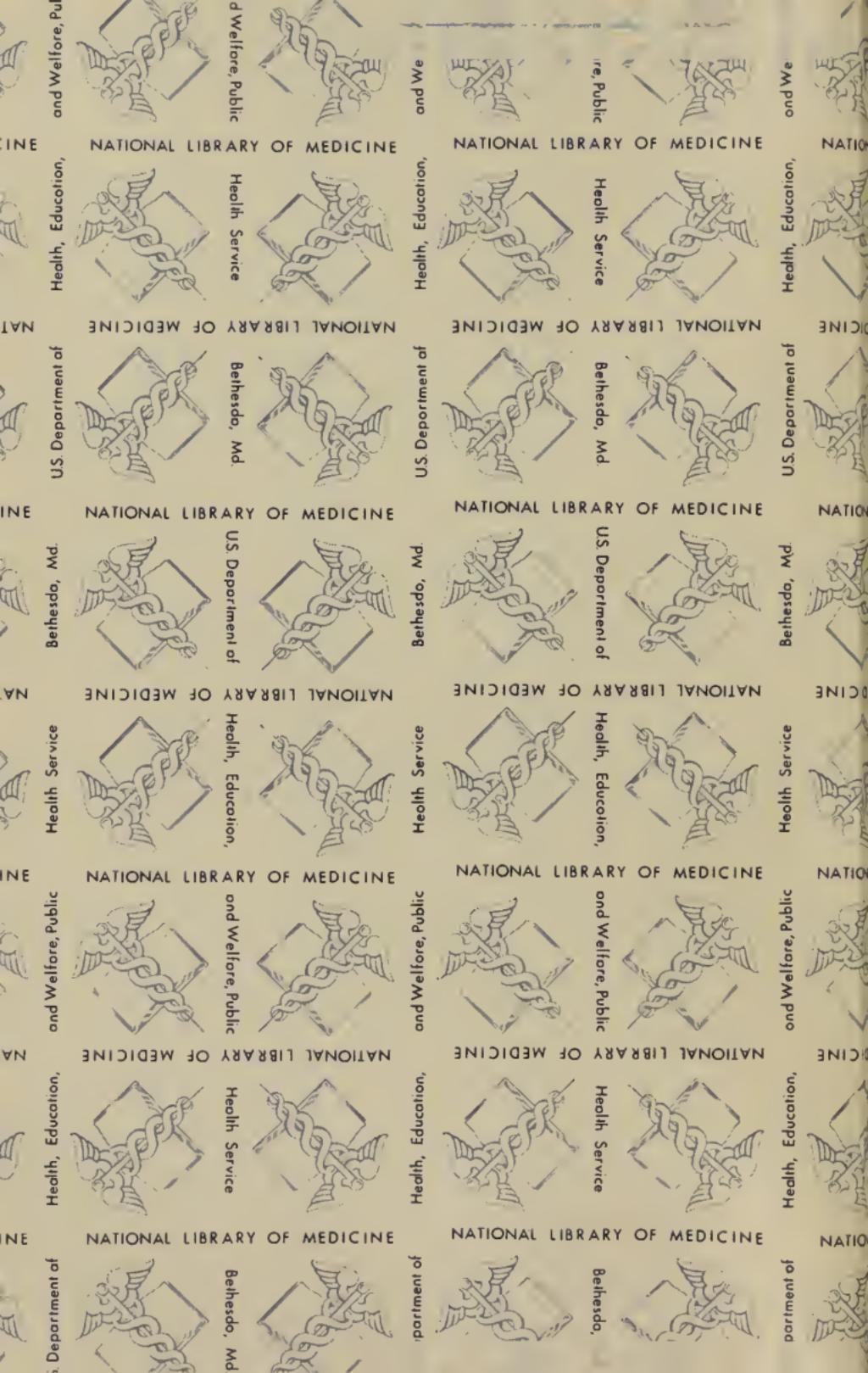
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